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NEXT ANNUAL SESSION, PHILADELPHIA, JUNE 8-12, 1931

2nd Edition—Boyd's Surgical Pathology

The entire book was reset. Whole sections were rewritten, others recast, and extensive and important additions made to practically every chapter. There were added 130 illustrations.

To be more specific: The chapters on the thyroid and stomach were rewritten, as were the sections on the etiology of tumors, including melanomata, lymphosarcoma, tumors of the testicle and of the kidney, carcinoid tumors of the appendix, and endometrial implants.

Another added chapter gives practical suggestions as to how the surgeon may utilize the assistance of the laboratory. The chapter on the spleen was recast and includes Barcroft's physiological researches. The classification of the glioma group was recast on the basis of Bailey and Cushing's work. The section on malignant tumors of bone was rewritten, reflecting the information obtained from the Registry of Bone Sarcoma of the American College of Surgeons. Among other added material may be mentioned Cadham's work on the treatment of septicemia, tissue cultures, precancerous lesions, carotid body tumors, tumors of the xanthoma group, pituitary tumors, diverticulosis and the prediverticular state, Wilkie's work on the etiology of chronic cholecystitis, Counsellor and McIndoe's work on hydrohepatosis, chronic serous arachnoiditis, etc.

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BRAIN ABSCESS AS THE OTOLOGIST'S PROBLEM *

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KANSAS CITY, MO.

The greatest problem in the successful management of a brain abscess is in the diagnosis of the lesion. If the medical profession is to make any satisfactory progress in the management of the disease, the physician must first determine why a patient suffering from a brain abscess so frequently goes unrecognized until it is too late for surgical intervention.

Bagley [1] has aptly said that the fear of the presence of a brain abscess frequently prevents the physician from facing the unpleasant situation until the appearance of grave symptoms. In one way, a brain abscess offers the physician more than any other pathologic lesion, because he knows that it is always fatal if not operated on. There is no organ in the human body that can conceal its trouble so carefully as a brain which harbors an abscess. Nor is there a pathologic lesion that explodes with such sudden and fatal results.

Eagleton [2] has compared a patient with a brain abscess to a hibernating animal, in that the patient has a subnormal temperature, tachycardia, slowed respiration with diminished output of carbon dioxide, lowered blood pressure, relative peristaltic inactivity, and marked insensibility to painful and emotional stimulus.

It is no wonder that the otologist so frequently fails in the early recognition of the vague, yet important, symptoms. He diagnoses disturbances elsewhere in the body by deformity, inflammation, pain, fever and impairment of function. All of these may be so slightly disturbed by a brain abscess as to pass unrecognized. I believe he has been led to overrate the value of neurologic observations in the early diagnosis of brain abscess and has neglected the most important aid—the history.

Neurologic anatomy is so complicated that, by his absence of knowledge of the subject, the otologist excuses his own lack of skill in the recognition and diagnosis of neuropathologic lesions. This defense is unfair when one considers the large proportion of brain abscesses that do not show, particularly in their early course, any positive neurologic signs.

Lund [3] states that "the chief reason of the high mortality rate is that, of all the otogenic complications, the brain abscess most frequently escapes being recognized in due time."

Körner [4] first established the fact by a large series of necropsies that in more than 85 per cent the brain abscess was adjacent to the original focus of infection. Von Bergmann,[5] as early as 1888, determined that a primary focus was always necessary in the formation of a brain abscess. Available statistics show that over 50 per cent of all brain abscesses are otogenous, and, of this number, about 80 per cent arise as a complication of chronic mastoid disease. Lund [3] has shown in a series of fifty-four cases, which were completely studied, that more than half of them were secondary to cholesteatoma.

From the foregoing remarks it is quite obvious that brain abscess is, in the beginning at least, an important otologic problem and ranks along with meningitis and sinus thrombophlebitis as one of the three major complications of otitic disease. Since any of these diseases may exist as a complication of the other, it seems to me that the management of brain abscess is just as much the responsibility of the aural surgeon as is the sigmoid thrombophlebitis or the otitic meningitis. Also the brain abscess, which is most amenable to treatment, is the one that lies in close proximity to the affected mastoid. Certainly the approach to the otogenic brain abscess falls within the field of the otologist, and the drainage of the abscess is usually a minor part of the operation.

Dandy [6] has brought out the importance of the value of a minimum of surgery and slow drainage of the abscess. A rubber catheter is used, which is removed in from forty-eight to sixty hours. There is no irritation and no finger exploration. The brain tissue is not removed, and there is only a nick in the dura to permit the entrance of the drain.

PATHOGENESIS OF BRAIN ABSCESS

The exact development of this lesion is not accurately known. Experimentally, it is very difficult to produce. The clinical observations, which are confirmed by operation and by necropsy studies, have not afforded a large enough series to determine all the different stages in the development of this disease. It is known, however, that the time of development may vary from a few days to several weeks and that a patient may harbor a brain abscess for as long as sixty-four years. The average duration is four and one-half weeks and should be considered the maximum time limit for handling this disease.

The stages of development may be divided into four parts—the initial, latent, manifest and terminal. These

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1. Bagley, Charles, Jr.: Brain Abscess: Clinical and Operative Data, J. A. M. A. **81**: 2161-2166 (Dec. 29) 1923.
2. Eagleton, W. P.: Intradural Complications of Aural and Nasal Origin, Arch. Otolaryng. **2**: 60-84 (July) 1925.
3. Lund, Robert: Diagnosis and Differential Diagnosis of Otogenous Brain Abscess. Acta oto-laryng. **11**.
4. Körner: Diagnosis and Differential Diagnosis of Otogenous Brain Abscess, Acta oto-laryng. **11**.
5. Von Bergmann: Diagnosis and Differential Diagnosis of Otogenous Brain Abscess, Acta oto-laryng. **11**.
6. Dandy, W. E.: Treatment of Chronic Brain Abscess by Tapping, J. A. M. A. **87**: 1477-1478 (Oct. 30) 1926.

may all vary and they frequently overlap. The patient is usually diagnosed in the manifest or terminal stage, at which time he has two classes of symptoms: general or systemic, and local or brain symptoms. Under general is a marked lethargy, sallow complexion, slow respiration, loss of appetite, constipation and subnormal fluctuations of temperature of about 2 degrees. The most characteristic finding in the history of a patient with a brain abscess is the negative stage; he has no complaints except one—headache—which falls under general brain symptoms, and, unless he is in a late or terminal stage, headache is the most constant and important symptom. The headache that a patient with a brain abscess complains of is unlike any other type of headache, except possibly that of brain tumor. It is unrelieved by any form of medication; it is constant;

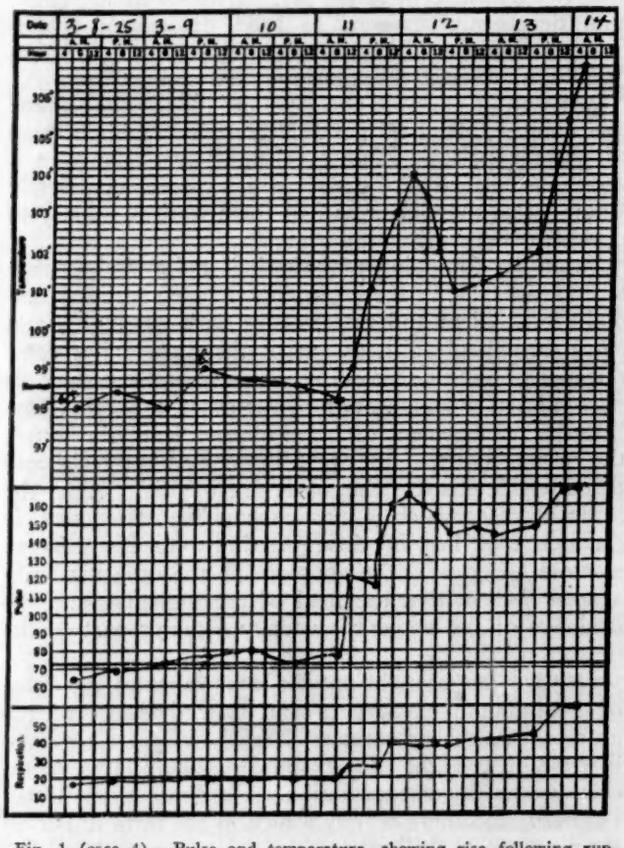

Fig. 1 (case 4).—Pulse and temperature, showing rise following rupture of the brain abscess.

it gets progressively worse; and, were it not for the lethargic state into which the patient rapidly sinks, it would no doubt be the means of rescuing him from his disastrous condition more frequently than any other symptom. Other general brain symptoms which are usually present are vertigo, sudden vomiting, slow cerebration, bradycardia, photophobia and, last and of most infrequent occurrence, optic neuritis.

Since this paper does not deal with the localization of the brain abscess, that part will not be considered. However, cranial nerve lesions do play an important diagnostic part, and particularly is this true in lesions of the third, sixth and seventh cranial nerves of uncertain etiology.

SEROLOGY

The patient with a brain abscess usually has about 12,000 leukocytes and a moderate decrease in the red blood cells and hemoglobin, as the disease progresses. Cytologic examination of the spinal fluid gives various results with the different stages of the abscess. The chief diagnostic aid in the study of the spinal fluid is whether the patient has a sterile or a septic meningitis. The pressure readings of the spinal fluid, and the reaction of the patient following these lumbar taps is, in some cases, of striking importance. It should be borne in mind that, in every patient with a brain abscess, the primary stage is closely associated with a diffuse meningitis, particularly in abscesses of otogenous origin and may at the onset present such a confusing picture as to make a differential diagnosis impossible (case 3).

ILLUSTRATIVE CLINICAL CASES

CASE 1.—One interesting case of a brain abscess has recently come under my observation which not only explains one of the ways in which an abscess may form but also its duration. A man, aged 30, was admitted to the hospital with his first attack of mastoiditis. During the mastoidectomy the surgeon curetted some tissue which he thought was thick pus. This was sent to the laboratory, and the pathologist pronounced it brain tissue. The patient developed severe headaches, with a rise in temperature to 103 F. Five weeks later the necropsy revealed a fully developed brain abscess at the site of curettement. The abscess had ruptured, producing a diffuse meningitis. This is the only case of brain abscess coming under my observation in which the exact time of the onset could be precisely determined.

CASE 2.—Miss M. T., aged 21, was admitted to the Isolation Hospital, March 3, 1924, with measles. Four days later she developed a supra-orbital swelling. There was a profuse straw

TABLE 1.—*Location of Abscess*

	Not Diagnosed	Diagnosed, Not Evacuated	Diagnosed and Evacuated	Total
Cerebellar	..	..	8	8
Abscess of left temporal lobe	..	..	2	2
Abscess of right temporal lobe	..	1	3	4
Multiple abscesses	..	1	..	1
Subdural abscesses	..	2	1	3
Unstated	1	2	4	7
Total	1	6	18	25

colored, watery discharge from both nares and she complained of a slight frontal headache. The following day this condition resembled erysipelas, but her general condition improved; her temperature subsided and she had less headache. Five days later the swelling became localized and when incised over the inner canthus, an ounce of thick yellow pus was drained off. The wound healed promptly.

Without warning, her left ear discharged at this time. She had no symptoms of mastoiditis. Apparently this was a very mild type of ear infection as the discharge rapidly diminished and the patient made no complaint relative to the ear. In fact, she made no complaint about any of her illness, insisting that she had no headache and no pain. She was quite listless but answered questions in a normal manner and seemed to resent any examination or disturbance. Her general condition seemed to be improving. Her temperature was never above normal; she lost no weight, ate well and slept well. However, she did have some unusual symptoms. She frequently had urinary incontinence, and at one time the nurse noticed that she removed the packing from her supra-orbital wound and reinserted it with her nail file. She swore at the nurses and was quite vulgar in her conversation. I reprimanded her severely about this, but she was not disturbed and apparently took no offense.

April 1, nearly a month after her admission, in making the rounds, I noticed that she was standing at a window on the second floor laughing and joking with friends on the outside of the hospital. She apparently was in good condition and I did not examine her.

The following day she became quite listless and paid no attention to her surroundings. This condition gradually became worse; she seemed to fall into a natural sleep and had a shallow,

slow respiration and a regular full pulse of 50. She refused food and water.

I suddenly realized that I was dealing with an intracranial disturbance, but owing to the fact that she had a septic focus in her left ear and also one in her left frontal sinus, and with no localizing signs, it was difficult to determine which area of her brain to explore. Neurologic consultation was no help. Remembering that the left frontal sinus was involved first, I decided to expose the left frontal lobe.

The frontal sinus showed evidence of long standing infection and an abscess containing about 2 ounces (60 cc.) of thick white pus, under considerable pressure, was opened in the left frontal lobe of the brain. Immediately the respiration and pulse became faster and stronger and the following morning she ate a hearty breakfast and carried on a particularly jovial conversation. She remembered little of her stay in the hospital and nothing at all of the preceding five days.

She had a paralysis of her sixth cranial nerve which promptly cleared up and she made an uneventful recovery. There was a moderate bilateral choked disk which was discovered only the day prior to operation.

It is difficult to understand how a patient with such extensive brain involvement could have passed unrecognized while constantly under one's observation. Three weeks elapsed from her first definite symptoms of brain abscess until she was operated on. This period corresponds exactly with that experienced by Bagley,[1] who was also at a loss to explain such dangerous delays. I repeatedly insisted on a more complete history in this case, but the interns were unable to obtain it because the patient had no relatives in the city.

Patients do not suddenly develop urinary incontinence without cause, and the peculiar mental state which aroused my early attention should have brought forth a closer study of this patient. Her serious and almost fatal preoperative condition shows how hazardous it is to wait for definite localizing signs prior to operation. Such a procedure usually offers the pathologist an opportunity to make the intracranial observations at autopsy.

CASE 3.—Sept. 27, 1927, J. G., a painter, aged 29, was admitted to the Isolation Hospital with a diagnosis of otitic meningitis. He had a draining right ear which had been present for twenty years, since an attack of measles, but this ear had caused him no particular trouble until the night of September 22, when it felt full. He went to a doctor and had it washed out. Four days later he was unable to reach the doctor's office on account of a chill followed by high fever, a severe bursting headache, projectile vomiting, delirium and weakness.

On admission, his temperature was 104.6 F. The white blood cell count was 12,600; 85 per cent hemoglobin, a normal urine and 15,500 cells in his spinal fluid, which were mostly polymorphonuclear. A smear of this spinal fluid showed, when stained, a mixed flora of bacteria with staphylococci and streptococci predominating. There was slight tenderness over the mastoid process but no swelling or redness. From the canal a small amount of foul smelling pus was exuding. The ear drum was gone. I concurred in my intern's diagnosis of otitic meningitis and advised the patient's relatives that nothing could be done for such a condition and that he would die.

Immediately following the spinal puncture the patient began to improve. His headache disappeared, he talked rationally and he ate his food without help, but he had no appetite and appeared very dull mentally. His fever subsided, and four days later another spinal puncture yielded, much to our surprise, only 150 cells with marked decrease in pressure and no organisms. After twenty-four hours there was no growth of bacteria from the cultures, and I suddenly awakened to the fact that I was dealing with a brain abscess of otitic origin.

The following morning a radical mastoidectomy was performed on the right ear; the dura of the middle fossa was covered with old dense granulations, through which yellow globules of pus were oozing. When the dura was incised, about 2 ounces (60 cc.) of yellow, foul smelling pus oozed forth. The patient rapidly improved while on the operating table. A catheter was inserted as a drain, and that afternoon the patient smoked a cigaret and wanted to know how the world series baseball games had come out. The patient made a complete recovery and has been well since.

It was rather by accident that this patient was operated on for brain abscess. Had not the second lumbar puncture been done and the patient showed such striking symptoms of brain abscess, I would have accepted the otitic meningitis as a hopeless condition.

I recall, with regret, similar patients who have come under my observation and on whom I was satisfied to accept the diagnosis of otitic meningitis as a fatal terminal event. Perhaps none of them might have made the spectacular response to surgical intervention that this patient did, but they were entitled to more careful and optimistic consideration. The only way that I can understand this patient's recovery, after streptococci were demonstrated in the spinal fluid is that he developed a systemic immunity to the infection as well as a local walling off of the abscess.

Fig. 2 (case 4).—Appearance of brain after fixation, showing the bilateral abscesses.

This unusual spinal fluid finding with recovery is similar to case 4, except that the latter patient, after having recovered from his meningitis, developed multiple brain abscesses which were not drained.

CASE 4.—Jan. 25, 1925, a man, aged 40, was brought to St. Luke's Hospital with the following history:

Nov. 2, 1924, while working as a carpenter, a scaffold collapsed and the patient fell about 12 feet. He alighted in the débris on his buttocks and was momentarily unconscious. He felt no discomfort at the time, and helped remove his partner, who appeared to be more seriously injured.

On the advice of his foreman he went home, and that night his wife noticed that he bled from his left ear. The following day he had quite a profuse epistaxis, which was uncommon for him. He felt well enough to work the following day but was advised by his family not to do so. Two days later he drove his car 70 miles and for the first time complained of a severe frontal headache. Two days after that he took quite an extensive motor trip to a neighboring state and was gone six days.

On his return his relatives noticed that he was much slower in his movements and did not answer questions promptly. He tried to chop wood but was too weak.

His condition remained about the same for a month, when he developed a right earache. The drum was incised, producing a purulent discharge and relief of pain. One week after this he became semiconscious and had several severe vomiting attacks. This was followed two days later (December 17) by convulsions, with head and eyes turned to the left, and his head drawn back. His temperature varied at this time between 102 and 106 F. During the first twenty hours he had fifty-two convulsions. A lumbar puncture revealed a cloudy spinal fluid with normal pressure and no demonstrable organisms either by smear or by culture. A cell count was not made.

His family physician quite naturally diagnosed a nonepidemic meningitis, but much to the physician's surprise, within three days he seemed to improve. The convulsions stopped, and although he was semidelirious and had intermittent attacks of projectile vomiting, the elevation of temperature subsided and he began to eat and regain some of his strength. His pulse rate did not go above 48.

At this time (Jan. 25, 1925) he was brought to the hospital. He was in a fair state of nutrition and appeared uninterested in his surroundings. He did not look very sick. His response to questions was slow and it was difficult to get his cooperation in the examination. He apparently had some impairment in his hearing. In his right ear was a dried purulent discharge, and the left drum was normal. There was no evidence of injury about his head. The pupils were round, regular and equal, and reacted normally. There was a moderate increase in the swelling of the optic nerve heads, more marked on the left side. The tongue was moist and protruded normally. The pulse rate was 46 and regular; hemoglobin was 85 per cent; white blood cells, 12,400; red blood cells, 4,700,000.

The blood Wassermann reaction was negative.

February 3, after observing him for one week without noting any change in his symptoms, I decided to go in through the frontal sinus and explore the silent area of the brain, selecting this site partly on account of the suggestive roentgenographic observations, but principally because an abscess in this portion of the brain could explain the negative localizing signs.

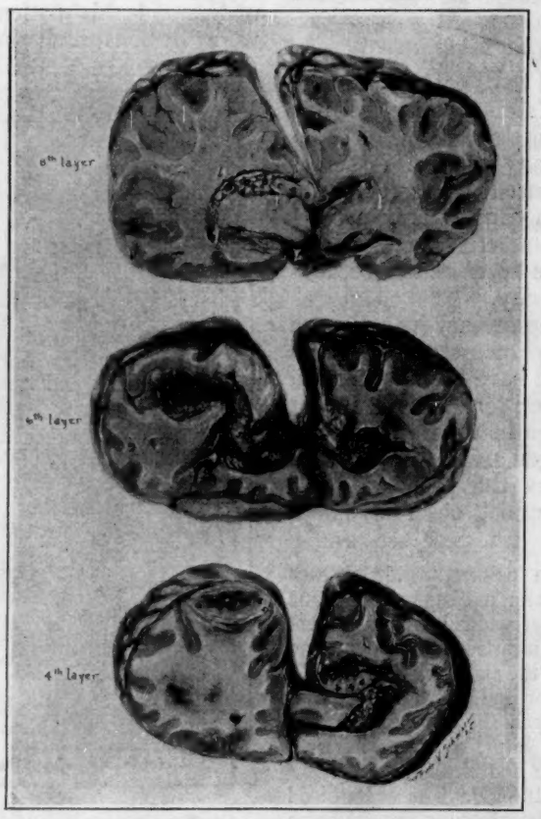

Fig. 3 (case 4).—Cross-sections of brain through the fourth, sixth and eighth layers, showing the extensive abscess formation and rupture into the ventricles.

After opening into a normal frontal sinus without evidence of fracture, I removed the inner table and uncovered an aerocele, which expanded with each inspiration. The dura was incised and a large lumbar puncture needle was inserted. A small amount of caseous material was removed, but no frank pus. A soft rubber drain was inserted 1½ inches. There was practically no drainage through the tube. It was removed on the fifth day. The wound healed without infection.

One week later the brain was again explored for an abscess. The frontal wound was reopened. A trephine opening was made over the right temporofrontal region and the right mastoid opened, exposing the dura of the middle fossa. From these openings the brain was explored thoroughly in every direction, both with a needle and with a thin narrow spatula. No pus was found and the patient was returned to his room. He made no improvement and died ten days later (fig. 1).

Necropsy revealed multiple abscesses involving both anterior hemispheres of the brain (figs. 2 and 3). The right abscess had ruptured into the right ventricle, producing a diffuse meningitis. There was no evidence of any primary focus or skull fracture. The mastoid was normal.

It is pathetic to fail in localizing a brain abscess when one feels so certain that an abscess is present. The autopsy observations made the effort seem all the more futile.

This case brings out two interesting points: first, the enormous amount of brain involvement with a total absence of localizing symptoms; second, the difficulty of locating a brain abscess at operation.

CASE 5.—Jan. 13, 1930, a boy, aged 8 years, was admitted to my service for a mastoidectomy. Following an attack of measles at the age of 2½ years, he had had severe pain in his right ear. The ear did not drain and caused him no further trouble until Dec. 7, 1929. Following a severe head cold at this time he had severe pain for about ten days and a temperature of 104 F.; he was delirious and had urinary incontinence and disorientation. He was dizzy and was unable to walk alone; he complained bitterly of frontal headache, talked incoherently, and was unable to recognize his mother. At times he was unconscious, and he complained of being short of breath. He said that his head felt big.

December 24 I incised the ear drum. There was a profuse discharge of pus under pressure and he promptly improved. He attended school for two days and returned home with a temperature of 101 F., with severe pain over his right eye, and earache. His mental disturbances returned. He had difficulty in walking and insisted that the roof was falling in on him. At this time, a mastoidectomy was performed.

There was an area of dura in the middle fossa one-half by one-fourth inch wide exposed which was markedly inflamed. The overlying bone bled freely. The mastoid cells were filled with purulent débris and, at the time, I thought that this dural irritation might account for some of his symptoms. The headache persisted, however, requiring frequent hypodermics of one-half grain (0.03 Gm.) of codeine to control it. Five days following the mastoidectomy he had what his mother described as a "fit." He had a marked photophobia and a diplopia, and was unable to differentiate various objects in the room. He was extremely dizzy, had loss of appetite, vomited frequently and had a rotary nystagmus counterclockwise; there were 15,000 leukocytes. The eyegrounds were normal and there was a moderate weakness of the right external rectus muscle.

Six days following the mastoidectomy, his brain in the region of the middle fossa was explored, but no abscess was located. A rubber catheter drain was inserted and I contemplated a later exploration of the cerebellum. Three days later there was a sudden discharge of pus through the drainage tube, and the patient promptly was much better. Within four days the drainage had all stopped, the patient seemed normal in every way, and he was dismissed one week later.

This patient again illustrates the relation of the chronic ear infection to brain abscess, the rather obscure early symptoms, the more or less accidental

drainage of the abscess, and the advisability of waiting between brain operations in the hope that the abscess may reach the drain.

CASE 6.—G. E., a girl, aged 11 years, was brought to Mercy Hospital on account of severe headache and inability to walk without falling forward. Five years before she had had a severe earache, following an attack of influenza, at which time her ear did not drain, but the mastoid process became swollen, red and tender, and the mother was advised to have the child's mastoid process operated on.

This swelling gradually subsided, and she had no more ear trouble until Chrismas, 1926, two months prior to the hospital admission. Following a cold, she had a severe left earache, and, for the first time, the ear started to drain. This gave her only temporary relief, however, as she developed a severe frontal headache which was continuous and kept her awake nights. Gradually this subsided. Three weeks later, while returning from school, she was drenched in a rain storm. Following this she had a hard chill with a high fever, projectile vomiting and a return of her headache. The ear continued to drain but did not cause pain.

On admission to the hospital she was only semiconscious. She fell forward when she attempted to walk, and had a marked photophobia; the pupils were widely dilated, and it was difficult to arouse her. She groaned continuously and would scream out occasionally and beg to be relieved of the pain over her eyes.

Her diagnosis was so obvious that the admitting nurse told me I had a patient with a brain abscess in my service. With the typical ear history the location was not difficult to surmise.

A simple mastoidectomy was promptly done. The cortex was thick and hard and prevented external drainage. The entire mastoid process was filled with a pulsating abscess under distinct pressure. The floor of this abscess was the dura covering the sigmoid and was covered with dense, fibrous tissue indicative of an old process. So much pus was found, and the patient improved so promptly when the abscess was drained, that I thought it probable that I was dealing entirely with an extradural abscess.

The child made all the characteristic postoperative brain abscess improvements, except one; she still had her severe frontal headache. I was called out of the city for twenty-four hours, and, when I returned, I found my patient in exactly the same condition as on admission.

She was returned to the operating room, and a small abscess was drained directly beneath the lower third of the sigmoid. About 2 drachms (8 cc.) of light yellow pus was found. There was no improvement, and further search for another abscess was continued until the patient's condition became so grave that it was thought inadvisable to continue. In desperation a rubber catheter was dropped into the cerebellum through a small incision in the dura of the posterior fossa. The mastoid wound was lightly packed, and the child was returned to her room in about the same condition as that in which she had left it.

That night her condition became so serious that oxygen was administered. The respiration slowed to 6 a minute. She could not be aroused. Imagine my surprise when I found her the next morning eating breakfast with a ravenous appetite, entirely unaware of her recent experience!

The night nurse said that about midnight she noticed that the mastoid dressings were saturated with pus and that the patient suddenly began to breathe more normally, that the pulse increased in volume and rate, and that, when the patient awakened at 6:30 a. m., she asked for food. Her headache had also disappeared.

When I changed the dressings about the ear I noticed that a large amount of foul smelling pus had completely saturated all the gauze and had drained out on the pillow. From the catheter which I had inserted into the cerebellum, thick, greenish yellow pus was oozing forth. This was aspirated, and the abscess was gently irrigated with Asch's solution without moving the tube. A considerable amount of pus was washed out.

Except for a paralysis of the external rectus muscle of the left eye, the patient was normal in every way and continued to make rapid progress. On the sixth day after the operation, while I was irrigating the abscess for the last time (since the washings were clear) the patient suddenly screamed, "Oh, my head" and, grasping the top of her head with her hands, fell backward on the pillow and was apparently unconscious.

I did not attempt to arouse her but immediately wrote on her chart that I had killed my patient by rupturing the capsule of the brain abscess at a time when she had apparently recovered. I had noticed that the fluid did not return promptly about the catheter on account of the narrowing of the fistula, and, although I was using a 30 cc. syringe, I thought that I was not exerting enough pressure to cause harm.

TABLE 2.—*Summary of Signs and Symptoms*

Age incidence:			
10–20 years	9		
20–30 years	4		
30–40 years	6		
40–50 years	1		
50–60 years	3		
60–70 years	1		
Correct age not given	1		
Sex:			
Male	15		
Female	10		
Cholesteatomatous involvement:			
Cholesteatomas	4		
Resulting from trauma:			
Trauma	2		
Results:			
Recovered	6		
Died	19		
Autopsies	9		
Primary focus:			
Draining ears	14		
Eyes	1		
Infection of antrum from tooth	1		
Influenza	1		
Lungs	2		
Osteomyelitis of hip	1		
Sinus	3		
Unstated	2		
General symptoms:			
All had headache		Earache	
Choking		Epistaxis	
Convulsions		Holding of head to side	
Delirium		Instability	
Difficulty in swallowing		Motor symptoms	
Diplopia		Numbness	
Disorientation		Paralysis	
Dizziness		Rigidity of neck	
Draining ears		Slowness in response	
Drowsiness		Vertigo	
Forms of headache:			
Frontal	15		
Frontal and occipital	1		
Frontal and parietal	2		
General	4		
Occipital	2		
Unstated as to type	1		
Forms of paralysis:			
Facial	5		
Facial and side	5		
Side	4		
Partial	1		
None	10		

After returning to the office I was so depressed and worried that I did not care to see patients with minor ills, so I returned to the hospital. There she was sitting up in bed, cutting out paper dolls, and in spite of all my questions and suggestions she would not admit that there was anything wrong. Her convalescence has proved that she was correct, and her left eye has regained its normal movements.

An additional point of interest was the complete amnesia which she had from Christmas until her brain abscess was drained. This was demonstrated by her own observation that she could remember nothing about a serial motion picture from Christmas on, although she missed only one night.

She has done so well in school that a grade has been skipped, and her weight has increased 30 pounds (14 Kg.).

This case illustrates the danger of postoperative interference in brain abscess. Irrigations are unnecessary and there is danger of rupturing the abscess wall

and producing a diffuse meningitis. The favorable result here might be classed as an accident, but it demonstrates the advisability of inserting a blind drain, even though no abscess has been reached.

SUMMARY

During a recent visit to some of the Eastern hospitals, I was struck by the indifferent attitude of the otologist to the patient with a brain abscess. Once the lesion was diagnosed, the patient was promptly transferred to the neurologic service, where he was not seen again by the otologist. It was my impression that the brain abscess patient was shifted and transferred as much as possible from one service to the other because of the attitude expressed by the attending intern at one hospital in the words "I heartily approve of transferring these patients as all of our patients who develop brain abscess die anyhow."

It is, I believe, the fatalistic attitude toward this lesion which is so destructive to any progress in the proper management. One also frequently hears of the recurrence of this lesion and of the mental impairment which these patients afterward suffer. From experience with my own patients, and in reading of others, I am convinced that the patients who have completely recovered from a brain abscess suffer no more impairment after the operation or recurrence than patients who have had an appendectomy. One has only to see such skilful surgeons as Cushing and Dandy operating on the brain for the removal of tumors to realize how much may be done to this organ without disturbance of function.

After all, it does not matter so much who performs the surgery on the brain abscess, as the fact that it must be recognized early enough to afford an opportunity for proper surgical procedure. Falling, as it does so frequently, within the field of the otologist, it behooves him to be familiar with the clinical course of this lesion and to realize how frequently brain abscess exists as a complication of ear infection.

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ABSTRACT OF DISCUSSION

DR. R. BISHOP CANFIELD, Ann Arbor, Mich.: In our last series of forty-two cases at the University of Michigan Hospital, otitic suppuration was by far the most important single factor, being important in 38 per cent of the total number. The question occasionally arises as to whether in a given case of otogenous brain abscess it is better to eradicate the suppurative otitis media and then to attack the brain abscess or to reverse the procedure. In this connection it must be borne in mind that a previously active but apparently healed otitis media is of but slightly less clinical importance than a suppurative otitis media, active at the time of observation. While I agree with Dr. Dixon that failure to recognize the presence of the abscess at the earliest possible moment is regrettable, I feel that careful consideration must be given to the selection of the most favorable time for operation. I am by no means of the opinion that the operation should always be made as soon as the presence of the abscess is recognized. While it is fatal to delay intervention until a leptomeningitis has been established, it is unwise to intervene during the acute stage, during which the condition is essentially a progressive acute encephalitis. Intervention at this time is likely to bring about an extension of the encephalitis and to set up a leptomeningitis. It seems wiser to wait within reason for the attempt on the part of nature to form a limiting membrane around the focus of infection. The chief problem that the otologist faces is whether he shall approach the abscess from the mastoid or through the neighboring part of the skull. This question should be decided at the operating table and in accordance with the conditions found in each individual case, three important points being borne in mind: 1. Opening the brain from the infected mastoid cavity may establish a meningitis when no definite track of infection can be demonstrated. 2. Abscesses lying deeply beneath the cortex must be made superficial before successful drainage can be maintained. 3. The abscess that can be drained most successfully is the one that is reached by a path extending at right angles to the skull. In general I agree heartily with the precepts laid down by Dr. Dixon.

DR. FRANCIS V. GOWEN, Philadelphia: Bárány stated that at the beginning of the war the Germans and Austrians lost most of their brain abscess cases as the result of packing the abscess cavities with gauze. This gauze, instead of aiding in the removal of the pus, merely became saturated and acted as a cork, preventing efficient drainage, and in addition caused it to burrow back along the course of the nerve fibers, thus causing dissemination of the pus and eventuating in a generalized encephalitis. When they changed to the other method they reversed the figures and most of the patients were saved. The newer treatment consisted in making a wide incision into the abscess cavity, gently irrigating the pus contents from the lowermost depths, separating the lips of the wound widely and using head mirror reflected light so the operator knew when he reached the bottom of the wound. After complete examination the lips of the wound were kept apart with glass or noncorrosive metals or stearophil paper, and the patient's head placed in favorable position for the continuous flow of drainage. This treatment was given two or three times a day. The fact that it is important to see to the bottom of the abscess cavity necessitates the use of a head mirror, and since a head mirror is an unwieldly object except in the hands of one accustomed to its use, one might conclude that otitic brain abscesses are best handled by the trained otologist.

DR. E. LEE MYERS, St. Louis: I have had only about eleven cases. I am not counting extradural and subdural abscesses, in which I believe most operators get good results. As I remember, the only patient that got well was a child that had a Bezold abscess. There was terrific swelling, and as soon as the cortex of the mastoid was uncovered a cavity was entered that was so deep that I did not dare do anything. I have seen this child grow up. I cannot say I am satisfied with the result because the child is not normal mentally. I do not know what she would have been if she had not the mastoid condition. The other children are well poised mentally. Of cerebral abscesses I have had about ten, and every patient died. One case was a multiple brain abscess, in which there was cerebral and also cerebellar abscess. I have recently had a case which has disheartened me. A child in less than a week after I had removed the adenoids started to have a fever but no chills. I did a jugular sinus ligation on the right side, and a short time afterward the child had more fever and I opened the lateral sinus on the other side. I had the characteristic swelling of the optic disk, and in four or five days the child developed a nystagmus to the right and a meningeal cry. This child gave me trouble for three or four months, but finally she got out of bed, with this terrific swelling of the optic disk, and went back to school and seemed to be normal. A year afterward the child seemed perfectly normal except occasionally for a little nystagmus. Three or four weeks prior to that time the mother called my attention to the fact that the child had slight headaches. I put her through tests and could not find a cerebellar syndrome, and sent her to a neurologist and he said that the baby was perfectly normal. This child was brought back later with explosive vomiting, but two celebrated neurologic surgeons could not find what the trouble was. I turned the patient over to a general surgeon and he found a right cerebellar abscess. In three months the child developed meningitis. In other words, the child lived fourteen months after the first mastoid operation was done.

DR. J. B. POTTS, Omaha: I have to differ with the author as to the neurologist. After having worked with one for a considerable time, I feel that he is the best adviser I have. He does not hesitate to advise operation and he does recognize

brain abscesses of otitic and sinus origin. If one must have a consultant who is not used to ear, nose and throat work, I agree with the author that he can be a hindrance rather than a help. In regard to quoting statistics from foreign clinics, I think one has to be a little careful because there is a larger population to the physician than in this country, and more neglected ears than are found in the general practice of the otologist in the United States. I want to commend the author's approach to the abscess. I talked this point over with the neurologist I work with at home, and with a neurologic surgeon, and they both agreed that in all cases of brain abscess the best results were obtained when the abscess was opened with the least trauma to the brain. In other words, if a small opening is made into the dura and the abscess is found at the first puncture, the drainage tube introduced without plunging around in the brain and without introducing a knife or needle two or three times, and the tube removed gradually, such cases do the best; so I would heartily commend the suggestion that the least possible trauma be done to the brain. I have no quarrel about the different types of drainage. I use a type similar to that the author mentioned, except that I remove the rubber tube fairly early and use in its place a silver wire loop. In regard to early drainage, in talking with various men who have operated on brain abscesses I have found that all have observed that in the early cases in which the abscess was not walled off the danger of losing the patient was greater.

DR. JOHN F. BARNHILL, Indianapolis: In typical cases of brain abscess, the diagnosis is often easy. In atypical cases, such ease may not be expected. The symptoms on which diagnosis is based, as outlined by Macewen many years ago, are applicable to the typical, uncomplicated case and are of little or no help in others. To depend on slow pulse, slow respiration and subnormal temperature in all cases will lead the surgeon widely astray in many instances, for, if in addition to the abscess the patient suffers from meningitis, either local or general, increased pulse rate, rapid respiration and elevated temperature are usually present even though the brain abscess is large. Macewen's list of symptoms is therefore no longer useful and others must be depended upon. The history of the case, the pathologic condition found in the ear at examination, the condition of the bone found on mastoid operation if operation has been performed, are all suggestive and helpful. Papillitis or papilledema will be found usually, but often only after repeated examination. It is a symptom of intracranial pressure and therefore does not occur until such pressure is considerable. My chief point is, the unreliability of Macewen's series of symptoms in atypical brain abscess.

DR. HAROLD M. HAYS, New York: I should like Dr. Dixon's opinion about a certain type of case which is seen infrequently. I will illustrate by two typical examples: A number of years ago I operated on a youngster for a double mastoid condition. The recovery was more or less uneventful. At the end of three weeks she developed a high temperature and every symptom of meningitis. Spinal puncture showed fluid at a great pressure and very cloudy. The opisthotonos was so great that the head almost touched the heels. I returned her to the hospital again, a consultation was held and a diagnosis of acute meningitis was made. The prognosis seemed hopeless. However, I decided that it would do no harm to reopen the wounds and to uncover the dura. On the following day the child's temperature had dropped, she was conscious and sitting up in bed, and at the end of one week she went home entirely recovered. In the second case, a typical textbook operation on the mastoid was performed. On the fourth day the patient complained of excruciating pain in the middle ear. The temperature was 104 F. and signs of meningeal irritation arose. Spinal puncture showed fluid under slight pressure and clear. Consultation was held and a hopeless prognosis given. Because of the recovery in the previous case, I decided to uncover the dura. This was done and the following day the temperature became normal and the child recovered. Recently I had a patient referred to me who had been operated on for mastoiditis by a competent man. When I saw the child, a few weeks after operation, I found a healed wound but suspected some complication. I referred her to the hospital, where she remained for almost a week with a normal temperature and seemed well enough to be discharged as cured. A week later she developed a sudden high temperature and every sign of meningitis. She was not under my care at this time, but on being called in consultation I advised uncapping the dura. However, this was not done and the child died. Whenever patients have complicating elevations of temperature and symptoms after acute mastoid operations there is a possible localized infection in the dura or an epidural abscess and frequently recovery will take place if the dura is uncapped.

DR. O. JASON DIXON, Kansas City, Mo.: Regarding Dr. Myers' patient: I had a similar case which emphasizes the importance of looking over the nurse's record. The nurse often is describing a case of brain abscess, although she is unaware of the condition. Unbiased observations may be extremely valuable, and I always encourage the nurse to write down every detail, such as disorientation, vomiting, the patient's remarks, and what she thinks of the patient's progress. Of course, mistakes will always be made in the differential diagnosis of brain abscess, particularly in tumors and especially in tuberculous meningitis. I have recently explored the brains of three children with septic ears, who had tuberculous meningitis. That is one of the most confusing complications. A patient with a tumor case whom I had prepared for operation suddenly developed a high temperature and convulsions and died. I had diagnosed a brain abscess and thought that I had waited too long. At necropsy we found the tumor, so I was wrong on that. Neurologic consultation may be of great help, but one individual must accept the responsibility, and he should be the surgeon. If the responsibility is divided there will not be any action. Regarding the possibility of differentiating between acute and chronic brain abscess, that is really a difference in the pathologic changes. I am convinced that a higher percentage of good results in brain abscess would be obtained if the patient did not die of the meningitis, which they all have during the early stage of development. Unfortunately, they do not all have just a pachymeningitis but a diffuse meningitis, and they die before the abscess has time to form. The abscess is really the end-result and is not the primary part of the disease. I have had the same feeling as Dr. Barnhill about choked disk. I do not pay much attention to it. If I cannot see it, I let it go. Visual fields help if the patient is in a condition to cooperate. The case that Dr. Hays had I would interpret as pachymeningitis with irritation around the dura of the middle fossa. In practically every mastoidectomy with streptococcic infection I uncover the dura. I think that this is one stage of a brain abscess, but few go on beyond the pachymeningitis. It must constantly be borne in mind that patients with brain abscess may conduct themselves in a fairly normal manner.

Streptococci and Rheumatism.—To summarize the bacteriologic views of the moment, it would be correct to say that the close relationship of streptococcal infection and acute rheumatism is again receiving much wider recognition, although the exact cause of the disease still remains in doubt. The protagonists of the streptococcal theory of rheumatism are roughly divided into two groups—those who believe in a specific streptococcus, and those who imagine that various streptococci are capable of producing the disease. . . . The organism, which has been isolated by most investigators from the blood and various lesions in rheumatic patients, is a *Streptococcus viridans*, although on several occasions hemolytic streptococci have been reported. In 1927, a separate effort was made by two different observers, Birkhaug and Small, to establish another distinct streptococcus as the cause of rheumatism. Small called his organism the *Streptococcus cardio-arthritidis*, whilst Birkhaug, not venturing on a name, designated his as a new type of non-methaemoglobin-forming streptococcus. . . . During the last few years almost as much work has been done to show that no single type of streptococcus is exclusively responsible for rheumatism as previously had been expended in proving the opposite. —Poynton, F. J., and Schlesinger, Bernard: Recent Advances in the Study of Rheumatism, Philadelphia: P. Blakiston's Son and Co., Inc., 1931.

INTERTROCHANTERIC FRACTURE OF THE FEMUR *

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My purpose in this paper is to review 100 consecutive fractures of the femur occurring in adults and to describe in detail the method of management in intertrochanteric fractures which, in my experience, has given the best end-results.

Intertrochanteric fracture, as the name implies, is that fracture in which the plane of bony separation extends from the greater trochanter downward and through the lesser trochanter. This fracture should not be considered as a fracture of the femoral neck and should not be included in the consideration of fractures

Fig. 1.—Comminuted and impacted intertrochanteric fracture with separation of the lesser trochanter.

of the neck of the femur. This is mentioned because in not a few papers and in the clinical demonstration of fracture of the femoral neck, intertrochanteric fracture is at times included. It might also be stated that in a review of roentgenograms, intertrochanteric fractures are classified as fractures of the neck of the femur in many instances.

The anatomic varieties of this fracture are fairly constant. Most of the fractures are comminuted and frequently impacted (fig. 1). However, at times the fragments are separated and the hip angle is reduced from normal (which can be considered 130 degrees) to a right angle or less (fig. 2). This produces varying degrees of shortening. Rotation of the distal shaft is infrequently seen. Intertrochanteric fractures are at times accompanied by subtrochanteric fracture lines, running longitudinally into the shaft of the femur in the subtrochanteric region (fig. 3). Comminuted lines of fracture running into the femoral neck from the intertrochanteric region are not seen (fig. 4).

A compound fracture in this region is extremely rare; in fact, it is almost impossible for compounding to be produced, owing to the protection afforded this particular area.

A review of my experience with 100 consecutive cases of fracture of the femur in adults shows that 18 per cent of the femoral fractures were of the intertrochanteric variety. Other observers, such as Speed, state that 24 per cent of all fractures of the femur are intertrochanteric in location. The average age of the patients in my series who sustained this fracture is 58 years. In the series reported by Speed, the average age was 60. There is apparently a greater predominance of this type of fracture in men. It is practically unknown in childhood and rare in young adults, except after great violence.

It seems, therefore, that the predominance of this type of fracture in people past middle age is due to the amount of bone atrophy that is commonly present in the older patients. The age of the majority of the patients acquiring this fracture and the anatomic relationship in this location are predisposing factors in the rather high incidence of pathologic fractures due to metastatic carcinoma and bone cysts (figs. 5 and 6).

COMPLICATIONS

Local complications involving the fracture itself are uncommon. Those frequently encountered are due to the general condition and age of the patient, such as varying degrees of shock, cardiovascular lesions and pneumonia of the hypostatic or bronchial type. Nonunion practically never occurs. This is an interesting observation and in all probability is due to the excellent circulation that occurs in the bone at this point, as all branches of the nutrient artery of the shaft terminate at about the intertrochanteric line. Just above this line, in the neck of the femur, the reverse situation anatomically is present in that the circulation is extremely poor and there is a very high incidence of nonunion in neck fractures.

The age of the individual seems to have little or nothing to do with the union, since elderly patients repair intertrochanteric fractures with the same rapidity and completeness as do the younger individuals. On the other hand, in fractures involving the neck of the femur, age is supposed to be the greatest factor in nonunion. This is rather difficult to believe since in patients of the same age union occurs so rapidly in intertrochanteric fractures, as compared with fractures of the neck. The period of time necessary for bony union to occur in intertrochanteric fracture of the femur in patients whose average age is 60 is from six to eight weeks.

The mechanism responsible for intertrochanteric fractures can be briefly stated as follows: The patient usually falls backward or to the side, striking the trochanteric region directly on the ground. To resist this fall he usually holds the thigh in abduction and external rotation by the contraction muscles attached to the greater trochanter. In this manner he receives a fracture extending from the greater trochanter downward and through the lesser trochanter, usually impacting the fragments of the trochanteric region into the cancellous bone of the distal shaft. Complete separation

* Read before the Section on Orthopedic Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

* Owing to lack of space, this article is abbreviated here by the omission of several illustrations. The complete article appears in the author's reprints.

of the fragments may occur with backward sliding of the shaft toward the brim of the acetabulum.

DIAGNOSIS

The diagnosis of this type of fracture is in part made on the history of the patient's falling in the manner just described. Usually he is unable to walk on the injured extremity and the disability is more or less complete. In some, but not all, patients, the limb is shortened but not to the extent that is encountered in fractures of the femoral shaft. The foot is usually not everted as is frequently noted in fractures of the neck of the femur or dislocation of the hip joint. The axis of the limb is not visibly out of alinement excepting in those complete fractures in which adduction is present, with a decrease in the hip angle. Crepitus is usually present except in those fractures which are impacted. This is due to the fact that a large percentage of the fractures are comminuted. Adduction and rotation, if attempted, are always painful. The maximum point of tenderness is located over the greater trochanter, outside the femoral head and neck. The relationship of the upper border of the trochanter to Nelaton's line is not changed in most cases unless the trochanter is displaced well upward, which is not a frequent occurrence. I therefore believe that this sign, often stressed in the diagnosis of this fracture, is of little importance. Roentgenographic study of the region of the hip either confirms or refutes the diagnosis made on clinical observations.

Fig. 3.—Intertrochanteric fracture with extension of fracture line into shaft (subtrochanteric).

TREATMENT

The treatment of the patient suffering with an intertrochanteric fracture may well be divided into two parts:

1. A careful survey of the general condition of the individual. This is of extreme importance in this instance because of the age of the patients. Shock, cardiovascular complications and pulmonary complications are not uncommon and may often be prevented by a familiarity with the general condition of the patient and by the institution of prophylactic treatment soon after the injury. Anesthesia in patients of this type is to be avoided whenever possible and treatment planned to give the shortest period of bed confinement and the least restriction of motion, particularly of the knee joint. Apparatus should be applied which will give comfort to the patient, permit him to assume the sitting position and allow for early massage of the limb involved.

2. Treatment of the local condition. In my opinion the form of treatment which most nearly meets the foregoing indications is that of traction with suspension and abduction of the limb. This treatment is applied as a routine in all intertrochanteric fractures excepting the incomplete fractures without separation of fragments. In such instances the patients are simply kept in bed, perhaps with the limb supported with sandbags, for a period of three weeks. During this period heat in the form of infra-red rays and massage are applied daily. This procedure seems to diminish the pain at the site of the injury and to increase the resolution of swelling. Weight bearing is not allowed for from six to eight weeks after the injury and then only with the aid of crutches. The patient is permitted to walk without support at the end of three or four months. During this later period the massage is continued and active exercises, particularly abduction and rotation, are indulged in by the patient. Complete fractures usually present the following deformity for correction: 1. Shortening. 2. Decrease in the hip angle. 3. Adduction. It therefore follows that any form of treatment applied must be capable of completely correcting these anatomic conditions. This is accomplished by traction and countertraction in suspension, with the leg in abduction and with the knee and hip joints moderately flexed, the limb thus being in a position of neutral muscle pull.

Traction on a fully extended limb is to be condemned, as in most instances it will cause considerable difficulty with the knee joint and will not be nearly as effective in reducing the deformity as traction applied in the position of neutral muscle pull. Another method to be condemned is that in which so-called temporary splints are applied, causing delay in the reduction and permanent immobilization. Traction should be applied as soon after the injury as possible. The earlier it is applied the easier will be the reduction and the sooner

Fig. 5.—Metastatic carcinoma of the femur with spontaneous fracture. (Carcinoma of breast.)

will pain be controlled, a factor of considerable importance in these elderly individuals in the treatment of any shock present and in the care of their general condition.

The apparatus applied is a wooden adjustable bed frame (fig. 9). A Thomas ring splint with flexion knee piece is attached. The foot of the bed is elevated to prevent pressure on the perineum; the ring of the splint is bent to rather an egg shape to relieve any pressure in the trochanteric region which is apt to be present when the leg is swung into position of abduction.

Fig. 9.—Traction apparatus showing splint and frame in place.

Traction is important. In most patients the two plane type of traction, using adhesive plaster, is applied. This is applied with the knee and hip flexed and the foot kept at a right angle or in slight dorsal flexion. The amount of weight used in this type of traction is usually about 15 to 18 pounds in each plane of traction. Following this the patient is kept free from pain by the use of morphine and the weight is reduced as soon as the shortening is overcome. This is determined by simple measurement of the legs by means of steel tape. This method is far superior to the frequent measurement and gradual increasing of weight to obtain reduction of shortening.

Traction is applied without abduction at first until the shortening is overcome, as it is found that this is more rapidly overcome in the straight extended position than in the position of abduction. As soon as shortening is no longer present, the splint is swung out into as much abduction as possible.

A bedside roentgenogram is then taken and if difficulty is encountered in maintaining enough abduction to overcome the loss of the normal angle between the neck and the shaft, the opposite limb may be placed in the same position, or an adjustable pressure pad may be inserted over the greater trochanter, giving a fixed point on which to abduct the lower fragment.

In a few cases the shortening may be considerable and the hip angle much reduced. If this occurs in a young individual with heavy musculature of the thigh, ice-tong calipers should be applied rather than any type of adhesive plaster traction. Direct bone traction in this manner can be used with uniform success in all intertrochanteric fractures in which shortening is present, as the results are satisfactory. However, I do not feel that it is necessary except in a few selected cases.

The apparatus is left in place for periods varying from five to seven weeks and the patient allowed to move the knee joint after two weeks of immobilization. Massage to the intertrochanteric region and muscles of the thigh, together with the application of heat, is of considerable value in producing comfort and in maintaining the best possible condition of the musculature.

Bedside roentgen examination, together with clinical examination by manual attempts to move the trochanter in the anteroposterior plane and the amount of pain present on these attempted manipulations, are the guides in determining the amount of union present.

When from roentgen and clinical examinations union is known to exist, all apparatus is removed and the patient is allowed simply to lie in bed for a period of two weeks. During this period more active physical therapy is instituted, particularly that of active motion of the knee joint. The patient is then allowed up and about with crutches and a well fitted caliper walking splint. The use of a walking caliper splint is essential in these patients, as the earlier they are allowed to walk, the shorter will be the period of disability. While union in these fractures readily occurs, it has been found that complete repair of the fracture is at times delayed and if weight bearing is allowed under such circumstances, angulation at the site of fracture is very apt to occur, with a resulting coxa vara deformity.

The patient is then ready to be discharged from the hospital and as an ambulatory patient is given physical therapy three or four times a week. This physical therapy consists of infra-red irradiation or diathermy applied to the intertrochanteric region and hip joint, together with massage and active exercise of the knee and hip. Abduction and rotation are particularly important in this type of fracture.

The ambulatory splint is worn until the union has progressed to the point at which weight bearing without support seems safe, in uncomplicated cases about the end of the fifth month.

The other method of treatment that I have used in the management of these fractures is manual reduction with the aid of a mechanical table and the application

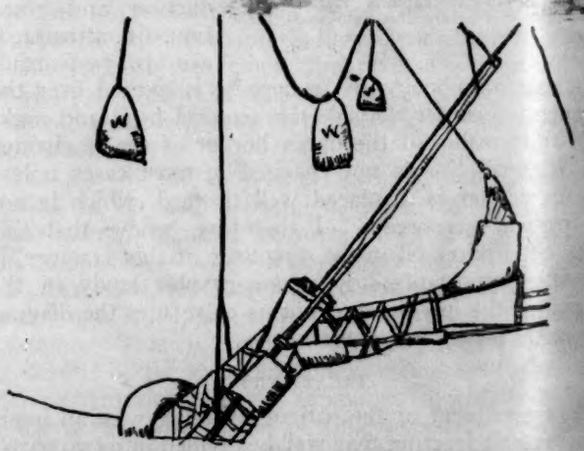

Fig. 10.—Method of applying two plane traction.

of a plaster-of-paris spica in abduction with slight internal rotation. To do this, in most instances, general or spinal anesthesia is necessary.

The disadvantages of this method over the method by traction as described are: the necessity for some form of anesthesia and a more rigid immobilization of the entire patient; the lack of ability to sit up in bed, with its consequent predisposition to hypostatic pneumonia and bronchopneumonia; the inability to apply any form of physical therapy to the musculature of the leg; the rigid immobilization of the knee joint which, in

people of this age, is a serious matter as far as future function of the joint is concerned; and the extended period of disability because of the prolonged treatment of a stiffened knee joint. The condition of the knee joint, in most instances, is more of a surgical problem than the intertrochanteric fracture.

The advantage of the method is that it enables one to effect a more perfect immobilization of the fracture line and maintain a greater degree of abduction, neither of which is especially important or worth the disadvantages of the method.

Open operation is indicated when the type of treatment described fails to produce reasonable anatomic reposition of fragments compatible with good function. In my experience, this indication has never arisen. Operative removal of projecting bone fragments may be indicated if the displacement is great enough to cause disability.

PROGNOSIS

If the patient receiving an intertrochanteric fracture of the femur survives the initial shock of the injury, recovery will ensue with a minimum loss of function and more satisfactorily and rapidly than from other types of fracture of the femur.

Fig. 11.—Ambulatory splint.

As nonunion is rare and the reduction of the deformity easily obtained, the prognosis in intertrochanteric fracture is good. The period of total disability rarely exceeds from six to seven months and the period of partial disability may continue for another month or six weeks. In the industrially injured, the period of disability is much longer. This is not unusual in this type of patient, as the disability is complicated by so many other problems than the fracture itself. For this reason any estimate as to the exact period of disability is without value.

In the industrially injured whom I have treated the average time between the injury and the date of return to occupation has been one year. In the same series, however, the average disability of patients not under compensation laws has been from six to seven months.

To state that patients with intertrochanteric fracture recover without any permanent functional loss is indeed an error, as nearly all have some permanent limitation of motion of the hip joint. The most notable limitation is that of abduction. In the industrially injured going before compensation boards, the average estimated permanent loss of function of the leg involved is much greater than is commonly supposed. The exact cause of the permanent limitation of motion is not clear. From a study of 100 patients examined from one to three years after injury, clinical and roentgen examination of intertrochanteric fractures shows that nearly all have some intra-articular hypertrophic change, although in no instance was the fracture line seen to enter the hip joint. Shortening of the abductor muscles of the hip was also a rather common finding in those patients with limited hip motion.

The question of function of the knee joint in these patients depends on many factors. In some of the patients, varying degrees of permanent loss of flexion have been found. In one or two instances, flexion of the knee was limited to a little better than a right angle. In the majority of patients, however, the permanent loss of function was from 10 to 15 degrees of flexion.

The patients in whom permanent knee joint involvement has been found are those who have been treated with a plaster-of-paris spica for immobilization. The age of the patient is also recognized as a factor in permanent loss of part of the function of the knee joint.

The mortality rate is low. In the patients studied in my series there were no deaths from intertrochanteric fracture, although the average age of these patients was much higher than in patients with fractures of the femoral shaft and almost equaled the average age of patients with fracture of the neck of the femur.

The prognosis then seems to depend for the most part on the protection given the patient's general condition, the avoidance of anesthesia and the early immobilization of the joints, which from my experience is best obtained by the routine use of suspension and traction in the treatment of intertrochanteric fractures.

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ABSTRACT OF DISCUSSION

DR. KELLOGG SPEED, Chicago: There are three more points about intertrochanteric fractures: They occur in elderly people, a bony union is sure to follow if the patient survives, and the mortality is rather high. Dr. Bartley mentioned that this fracture was not a fracture of the neck. It is not a fracture of the femoral neck. The symptoms and physical signs are decidedly different from those of the neck. The amount of impaction is usually striking. The amount of shortening is small and the patient may have so few pronounced symptoms that the fracture itself is overlooked at first until a roentgenogram is made several days or even weeks after the fracture has occurred. I don't see how it can be clinically confused with the dislocation of a hip, especially the ordinary posterior dislocation. Certain visceral symptoms accompany these fractures; namely, blood in the urine and in the stools and the development at times of a mild paralytic ileus. These symptoms are probably induced by the mechanism of the fracture, that is, by the force resulting from that mechanism, the smashing blow on the hip transmitted to the pelvis and the pelvic organs, as in those central fractures of the acetabulum in which the head is pushed through into the pelvic cavity. In a certain percentage of these cases the early and alarming symptoms are directed toward these visceral upsets. I have no brief for the plaster-of-paris dressing in this particular type of fracture because, after all, the dressing that gives satisfaction is the one to use; however, if suspension traction fails to restore the neck angle, it may lead to certain things, particularly to coxa vara and to the formation of excess callus. The cases of most pronounced excessive callus I have ever seen have followed intertrochanteric fracture; when the fracture was not reduced, the angle was not restored, and the scattered fragments, the large open cancellous bone surface, led to a large formation of new bone.

DR. HERBERT C. FETT, Brooklyn: The treatment of the patient is most important. As Dr. Speed said, if the patient gets well the fracture will get well. Early recognition and the institution of early treatment are important. The early treatment is so important that many of the hospitals are today regarding fracture as an emergency. I was surprised to hear

Dr. Bartley say that he started weight bearing between the sixth and the eighth week on the patients who had the split fracture. This seems to me to be somewhat early. I should prefer to keep these patients from weight bearing for at least three months. I was happy to hear Dr. Bartley say that he is getting away from the use of plaster of paris in these cases and it is my opinion that one has considerably more trouble with the knee joint subsequently than one does with the fracture itself. His form of treatment is very satisfactory, particularly in view of the fact that an anesthetic can be avoided in the older people. The last point I should like to bring out is the fact that I prefer to use the Steinman pin for the cases in which the fracture will not reduce rather than calipers, because of the possibility of calipers moving and also the possibility of infection.

LUNATE OSTEOMALACIA *

EDWARD S. BLAINE, M.D.
LOS ANGELES

A peculiar lesion of the lunate or semilunar bone of the wrist is being encountered with increasing frequency, a fact that has stimulated the interest of a number of roentgenologists and is the incentive for this presentation. Having encountered several of these cases, I present the results of a study of various factors in this unusual lesion.

Kienböck,[1] in 1911, first described the roentgen observations in this condition, and on this account the lesion is frequently called "Kienböck's disease." Köhler,[2] in his book on roentgenology, prefers to call it "secondary post-traumatic malacia." Others, among them Baum,[3] Frenkel-Tissot,[4] Hering,[5] Kautz,[6] and Henderson,[7] have written on the subject, using variants in terminology according to their individual points of view as to causative factors and pathologic conceptions. This lack of uniformity of terminology is tending to some confusion in classification. At the present moment authorities are not agreed on several of the aspects of the case, particularly the etiology. Thus, a division of opinion finds one group of observers which consider the condition to be due primarily to a trauma, while another group believes it to be nontraumatic in origin, with an incidental fracture occurring in some of the cases in a later stage of the disease process.

The roentgenologist's attention is directed to the condition by the roentgen finding of a faulty shadow detail of the semilunar bone in certain wrists, some with and others without injury. This abnormal appearance may be merely a fault in shape and size, or it may be a fault in bone detail, or both. A decrease in the size of the lunate bone is sometimes the only change noted. In the advanced case the normal, spongy or cancellous architecture is replaced by an apparently disintegrated bone showing ill defined margins and increased radiability—often with an osteoporosis that is quite marked.

A prominent feature in most of the cases reported in the literature is an insidious onset without sudden or severe injury, sometimes none at all, and a relatively long period of development of the lesion and the tardy appearance of the symptoms. Thus it has been found that, immediately after an injury relatively inconsequential, the roentgen shadows of the bones of the wrist are those of entirely normal carpal bones for a matter of several weeks. Because pain and disability still continue, roentgen study, made from several months to a year later, reveals a striking change involving only the lunate bones, the principal features of which appear to be those of a bone necrosis.

Those who regard the condition as the direct result of trauma divide these cases into three groups: (1) those due to the abnormal anatomic conditions incident to the lunate bone, (2) those due to occupational trauma in the form of repeated compression strains, and (3) those in which a single severe compression force initiates the disease.

Many observers consider the changes that characterize Kienböck's disease as due to a shutting off of the blood supply to the semilunar bone, as a result of which a nutritional starvation of the bone occurs with resultant softening, necrosis and disintegration.

In the eary stages of the nontraumatic form there is a relatively slight disability and slight pain for a short period; then follows a period of relative absence

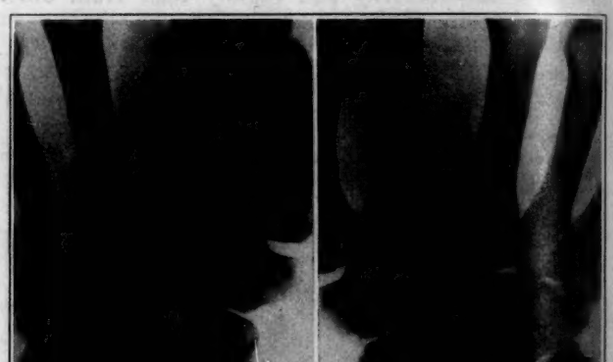

Fig. 1.—Left and right carpal regions in case 1, showing a normal left and a pathologic right lunate bone—typical "shrinkage" characteristic of the lesion.

of symptoms lasting from several weeks to several months, and this is followed by a third stage, in which the symptoms return, greatly accentuated. After a long period of time, usually with indifferent success in treatment, the symptoms may subside, but the recovery process is extraordinarily slow and the disability is considerable. The roentgen observations are practically unchanged even long after symptomatic recovery. In a few cases an osteosclerosis of the altered lunate bone was disclosed as an end-result.

Kappis [8] reports the microscopic observations in a case of malacia of the lunate bone in which there was a complete necrosis of the spongiosa and of the bone marrow.

It has been suggested by some observers that an embolic obstruction in the arterial supply to the semilunar bone is the cause of this lesion, the clot having resulted from a minute fracture; but many investigators question this hypothesis. Others call attention to the anatomic position and relatively poor blood supply of the semilunar bone, offering these as factors in the

* Read before the Section on Radiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

1. Kienböck, R.: Fortschr. a. d. Geb. d. Röntgenstrahlen **16**, 1911.
2. Köhler, A.: Röntgenology, New York, William Wood & Co., 1928, p. 36.
3. Baum, E. W.: Beitr. z. klin. Chir. **87**, number 3.
4. Frenkel-Tissot: Fortschr. a. d. Geb. d. Röntgenstrahlen **21**: 536, 1914.
5. Hering, W.: Zentralbl. f. Chir. (supp.) **51**: 505 (March 15) 1924.
6. Kautz, F.: Fortschr. a. d. Geb. d. Röntgenstrahlen **31**: 49, 1923.
7. Henderson, M. S.: J. Bone & Joint Surg. **8**: 504 (July) 1926
8. Kappis, M., quoted by Saupe, E.: Beitr. z. klin. Chir. **128**: 187.

production of the softening process that is found both roentgenologically and microscopically.

In some of the cases the roentgen shadows failed to reveal a fracture that actually was present, the failure being due to the transverse direction of the line of cleavage to the postero-anterior projections and the difficulty of visualizing the minute detail of the several superimposed carpal bone shadows on the lateral projections. In a number of cases it was only after pressure absorption on the apposing fracture surfaces took place that the shadow of the fracture line appeared on the later roentgenogram, the original roentgen studies failing to show a fracture. In a number of the cases cystic changes appeared to be a predisposing cause for Kienböck's disease. The minute fracture through these tiny cysts, which most roentgenologists of large experience have seen many times in carpal bones, seem logically to be a predisposing cause for the changes that characterize this lesion. One is impressed with the similarity of the changes in post-traumatic malacia of the semilunar bone and those of post-traumatic vertebral collapse, or Kümmel's disease.[9] It seems logical to assume that since the factors of etiology, symptomatology and pathology are more or less identical in these and in similar lesions that are found to involve various osseous structures of the body, they are all essentially the same lesion. Some observers include in this category Köhler's disease of the scaphoid, but Köhler himself specifically disagrees with this hypothesis.

A noteworthy point is the relative frequency of mistaking this lesion for an acute injury when the roentgen evidence is so definitely that of a chronic, preexisting bone lesion in a large majority of such cases. Undoubtedly, a number of these cases of lunate osteomalacia go through life unrecognized.

REPORT OF CASES

CASE 1.—A white man, aged 40, a machine setter, referred by Dr. M. S. Corbett in January, 1928, stated that in November, 1927, without any injury that he could recall, his hand began to hurt a little, and as it gradually got worse he complained of the pain, which interfered with the use of his hand. In December he had gone to a physician, who made a roentgenogram of the hand. He was told that "the x-ray showed a fracture of one of the wrist bones." The patient states that he could remember no injury at all and was puzzled about the occurrence of a fracture without sudden pain. He was treated for a carpal fracture but did not improve. His hand continued to be sore in one spot for several weeks when, becoming discouraged, he applied to Dr. Corbett, Jan. 9, 1928, for attention.

Because of the history of the roentgen finding of a fracture, the patient was referred to me for roentgen study of the part. There was some swelling of the soft tissues of the wrist and pain on movement and on pressure over the carpal area. Carpal tuberculosis was considered a possibility. As the result of my roentgen examination, I reported the finding of "no evidence of fracture or of tuberculosis but the typical shadows of a case of semilunar osteomalacia." In figure 1, which is a reproduction of the roentgen appearances, Nov. 9, 1929, a year after the onset, the semilunar bone is seen to have lost its normal shape as compared with the opposite one, and the edges of the bone are rough and irregular, while its volume has decreased considerably. The cancellous bone detail is lost and the density of the bone is decreased. The patient reports that he cannot use his hand for heavy work nor can he grip handles without more or less pain. He appears to have at least a 50 per cent disability.

CASE 2.—A white man, aged 42, a laborer, referred to me at the National Pathological Laboratory by Dr. R. W. McNealy, was lifting meat to a truck, Dec. 27, 1929, when he felt something snap in his left wrist. There was no marked amount of pain. Four days later he was first seen by a physician. At that time he had a painful swelling of the left hand and wrist. A roentgen study revealed on altered lunate bone but no fracture. This was treated by immobilization. Three months later he returned to work, somewhat improved. At this time the following observations were recorded: He was unable to flex his fingers completely in the palm of his hand, and there was some limitation of flexion, extension and rotation of the wrist. There was slight pain and evident disability.

My roentgenogram, April 22, 1930 (fig. 2), disclosed a pathologic lunate bone. The shadows indicated an altered outline and certain decreased densities within the deeper cancellous bone. There was no evidence of a fracture line. (I question whether a fracture actually existed at the time of the accident but believe the already softened bone underwent a partial collapse as the result of strain.) The roentgen evidence was clearly that of a malacia of the lunate bone, as were also the history and subsequent events.

CASE 3.—H. M., a man, aged 22, a bricklayer, a patient of Dr. Sumner L. Koch at the Passavant Memorial Hospital, complained of pain and consequent inability to use the right wrist and hand, May 8, 1930. The pain was mainly in the wrist. In March, 1929, the patient noticed that his wrist would pain on twisting and on lifting objects. At that time the pain was not definitely localized, nor was it very marked. In April he consulted a physician, who diagnosed it as a wrist sprain and gave him a light treatment, but there was no relief from symptoms. He then went to another physician, who also considered it a sprain and prescribed an analgesic salve and rest for ten days. However, he played ball every evening during this time. He noticed some relief during rest, but pain recurred on resuming work. He then consulted the company's physician, who suggested a wrist strap and rubbing lotion. The patient had roentgenograms taken at this time but did not wear the strap. He did not learn what the roentgenograms showed. In July the pain became worse, so the physician suggested seeing a specialist in Minneapolis. In August the patient quit work because of the pain and went to see the physician in Minneapolis, who took roentgenograms and applied a cast, which was kept on for two months. Following this, a brace was put on and kept on until January, 1930. The pain was relieved by this immobilization. In January the patient began a business course, but typewriting hurt his wrist so he gave this up. He was advised to rest indefinitely and not to use his hand much. This has not given him relief. His wrist has become rather stiff. A roentgen study by Dr. J. T. Case discloses a definite pathologic process confined to the lunate bone and was diagnosed as

Fig. 2.—Appearance of left wrist showing softened bone area in deep cancellous structure. The usual sequence to this state is the "shrinkage" incident to the softening of the bone tissues.

9. Blaine, E. S.: Radiology 15: 551 (Nov.) 1930.

Kienböck's disease. Operative removal of a softened and necrotic lunate bone was performed by Dr. Koch, the crumbled bone tissue offering considerable difficulty when complete removal of the diseased bone was attempted.

CASE 4.—W. P. M., a white man, aged about 30, was referred by Dr. Michael Mason to the x-ray department of Wesley Memorial Hospital, Feb. 18, 1928. He came to the hospital with an acute condition of the hand following an injury. He was an outpatient and therefore the records are not complete. Roentgen study at this time disclosed a lesion of the lunate bone, the

Fig. 3.—Appearance of right carpal bones in case 3 as found by Dr. Case about two years after onset. Presents the typical "shrinkage" of Keinböck's disease.

features of which indicated an old and not a recent change. This might, however, have been an aggravation of an old process in which fracture may have been a part. An analysis of the roentgen shadows disclosed a decrease in the volume, and irregular decreases in density had features of necrosis and disintegration, typical of an osteomalacia of the semilunar bone.

SUMMARY

1. Lunate osteomalacia occurs more frequently than is recognized.
2. Most often it is diagnosed as a fracture, even in cases in which there is no history of an accident or direct injury.
3. Twisting, or a blow to the wrist, is a frequent occurrence that results in the roentgen disclosure of a preexisting pathologic condition of the lunate bone.
4. The essential change is that of a softening of the bone with necrosis and deformity.
5. The surgical removal of the diseased bone does not materially reduce the disability.
6. This lesion often results in a major degree of disability.

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ABSTRACT OF DISCUSSION

DR. HOWARD P. DOUB, Detroit: The clinical observations have been well covered by Dr. Blaine. The thing that is most interesting to me is the question of etiology. This condition in some ways simulates Köhler's disease and some of the familiar conditions of epiphysitis. However, it most nearly simulates Kümmell's disease. The etiology of these conditions has not been settled. There are some significant facts, however, that might be mentioned. Hulten states that he has studied the anatomic anomalies in 400 cases of normal wrist joints and in these he finds 23 per cent in which the ulna is shorter than the radius. He finds other variations. I will dwell only on this: He finds that Kienböck's disease is particularly prone to occur when the ulna is shorter than the radius but never when the radius is shorter than the ulna. Preiser and Kienböck believe that no primary fracture occurs. However, some authors have claimed that, if films were made in various oblique positions, a fracture could be found in these cases. On studying the history of some of the cases reported and from the history of Dr. Blaine's cases this would not seem to be supported, because many of these patients had had their wrists subjected to chronic minor traumas only, such as laying bricks and things of that type. Kienböck believes that it is often caused by a partial or complete subluxation of the bone with spontaneous replacement, in that way destroying the blood vessels and leading to faulty blood vessel supply. However, Buchman has removed a number of these bones and has examined them microscopically, and he reports that he has found the bone tissue and marrow replaced by fibrous tissue. He also finds an increased blood supply rather than a decreased blood supply, and because of that he says that Leriche's theory that there must be increased blood supply in order to produce osteomalacia would seem to be supported. Another thing every physician has noticed at one time or another is the fact that a dead piece of bone is always more dense than a normal piece of bone, and that possibly might lend some support to this theory. The etiology, however, after all is said and done, is uncertain, but these facts are interesting in the study of this condition.

DR. THEODORE SOKOW, Kenosha, Wis.: I really believe this disease is not as rare as is commonly thought. There are many people treated for rheumatic conditions or for sprains who really have this condition, only it is not recognized. One who

Fig. 4.—Appearance of lunate bone in case 3, showing some disintegration, malformation and some shrinkage.

reads ten or fifteen papers written about this subject will find ten or fifteen different opinions about the etiology of this disease. I think Dr. Blaine's explanation is the right one. It must be figured that this condition is found in men and women between the ages of 20 and 40, mostly in men, always in hard working people who are exposed to different injuries. I believe that this disturbance of the semilunar bone is produced by trophic disturbances. Dr. Blaine mentioned a disease of the carpal bones which is not explained so far, some kind of degeneration, formation of small fine cysts, which a good observer can see in many cases, often overlooked. I believe, as Dr. Blaine explained, that

this so-called osteoporosis has some relationship to Kienböck's disease. The opinions about treatment of this disease vary. Some authors recommend surgical and others, conservative, medical treatment. The results are good and bad in both kinds of treatment. I observed the case of a man of about 35. He refused surgical treatment, so I started medical treatment with immobilization and physical therapy. I happened to see the man exactly three years later. His hand showed a slight swelling, but there was no pain, the function was only slightly impaired and he was able to do his former work. I think that too much haste should not be shown in recommending surgical treatment. Sometimes, conservative treatment may work out all right.

INCOMPLETE DILATATION OF THE LUNGS AS A FACTOR IN NEONATAL MORTALITY*

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Many children now die at birth or within the neonatal period who could and should live. Among these fatalities the largest group is that which results from one or other of such related conditions as primary or secondary failure of respiration, inadequate expansion of the lungs, and pneumonia developing from atelectasis.

The knowledge requisite to save a large percentage of these lives is now available. It is clear and certain. The method of its application is simple and inexpensive. It is merely an inhalation of carbon dioxide in oxygen for a few minutes several times a day during each of the first few days of life. Every new-born child, even those that appear normal, should receive this treatment as a prophylactic to insure early and complete relief of atelectasis. The hazard of neonatal pneumonia is thus largely eliminated. For the prevention of blindness, disinfection of the eyes with silver nitrate is, in most states, required by law. The inhalation of the mixture of carbon dioxide and oxygen requisite to insure full expansion of the lungs would save many times more lives than this treatment of the eyes prevents cases of blindness. In order to be universal, it will need to be legally required.

For 1927 the Bureau of the Census[1] reported for the birth registration area, or 87.3 per cent of the population, 82,931 stillbirths and 2,137,836 live births, a relation of nearly 4 to 100. Of those infants listed as live births 32,180 died within a day, 8,848 the next day, 6,345 the third day, 11,351 in the next four days, 8,296 in the second week, 5,457 in the third, and 4,617 in the fourth, a total of 77,094 in the first month, and 138,017 in the first year. Together, the stillbirths and neonatal deaths amount to nearly 8 per hundred births. If the statistics for stillbirths were more accurate, the figure would probably be 9, or possibly even 10, per hundred; a tremendous mortality. Premature birth is given as the largest single cause of death, 35,916; but prematurity cannot logically be accepted as in itself a cause, for unless a premature child fails in some function it lives. It is safe to assume that especially in the premature the real, but unrecognized, cause of death is often incomplete relief of atelectasis, secondary failure of respiration, and pneumonia.

UNRELIEVED ATELECTASIS

These statements in regard to atelectasis and pneumonia are largely based on the recent study by Cruickshank[2] of the causes of neonatal death as shown by 800 autopsies. That report states:

> The importance of asphyxia neonatorum as a cause of neonatal death is emphasized by the fact that almost 68 per cent of the 800 infants included in the present series died from this cause alone. Many of the cases which have been placed in the group of deaths from infection were doubtless predisposed to these infections by the effects of birth asphyxia. It is obvious that a deeply congested and imperfectly expanded lung is much more liable to the development of pneumonia than one in which circulation and aeration are free (page 22). There were 197 cases of pneumonia in the whole series of 800 neonatal deaths, so that this is the most common of all the infective lesions found. It was present in practically a quarter of the infants in the present series, and if deaths from asphyxia, prematurity and atelectasis are excluded, the frequency of pneumonia was practically 2 in 3. Of the infants which died during the first week of life 60 had pneumonia, during the second week there were 87, during the third week 37, and during the fourth week 13 (page 29).

Cruickshank defines the neonatal period as the first month of life.

These observations suggest, and others quoted later verify the suggestion, that even in apparently normal babies complete dilatation of the lungs may not be attained for hours or even days. Considerable areas of atelectasis escape detection by any means but the x-rays. For this reason it is not surprising that Cruickshank should have found nearly 25 per cent of cases of pneumonia in his whole series of neonatal deaths. This percentage is indeed much higher than any other observer has reported. It is accounted for by the fact that the diagnoses were based on histologic examination. Cruickshank's results indicate, therefore, that unrecognized pneumonia consequent on continuing areas of atelectasis is a far more frequent cause of death during the neonatal period than has been heretofore realized. It is particularly to remove this unrecognized hazard that inhalation should be legally required.

Wasson,[3] in this country, has reported a roentgenographic study on the lungs of new-born children, showing that even in normal cases full expansion of the lungs does not always occur immediately after birth. "In some cases of normal, easy delivery with the child in good condition, the lungs gave the appearance of full expansion within five minutes after delivery. Again in similar cases of easy delivery, but especially in those of prolonged difficult delivery, the expansion of the lung was found to take place slowly, leaving entire lobes atelectatic or with only scattered areas of atelectasis. . . . We called the lung fully expanded when there was air throughout all the parenchyma and no evidence of scattered density suggesting remaining atelectasis. The interval of time for this to take place ranged from five minutes to two weeks." The observation that atelectasis continues in some cases for as long as two weeks is highly significant.

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* The expenses of this investigation have been met in part by a grant-in-aid from the National Research Council.

1. Birth, Stillbirth and Infant Mortality Statistics, U. S. Bureau of the Census, Thirteenth Annual Report, part 1, 1927. Transactions of the Fifth Annual Meeting, American Child Health Association, 1928, p. 8. Adair, F. L.: Prevention of Neonatal Mortality from the Obstetrician's Point of View, Children's Bureau, U. S. Dept. of Labor, Washington, D. C., 1929. Bolt, R. A.: Causes and Prevention of Neonatal Mortality, Children's Bureau, U. S. Dept. of Labor, 1929. Frankel, L. K.: Present Status of Maternal and Infant Hygiene in the United States, New York, Metropolitan Life Insurance Company, 1929. Prevention of Stillbirths and Infant Mortality, League of Nations Inquiry, Brit. M. J. **2**: 441 (Sept. 13) 1930.

2. Cruickshank, J. N.: Child Life Investigations: The Causes of Neonatal Death: Medical Research Council Special Report Series No. 145, H. M. Stationery Office, Adastral House, Kingsway, London, W. C. 2, British Library of Information, 5 East Forty-Fifth Street, New York.

3. Wasson, W. W.: A Roentgenographic Study of the Infant Chest as Seen at Birth, J. A. M. A. **83**: 1240 (Oct. 18) 1924. Pearce, N. O.: Diseases of the New-Born, in Abt's Pediatrics, Philadelphia, W. B. Saunders Company **2**: 253, chapter XIX, 1923.

Von Reuss[4] summarizes the evidence of German observers on this subject thus:

> The lung does not undergo complete expansion at the first breath. The researches of Dohrn and Recklinghausen show that the respiratory exchange is extremely small on the first day. Measurements of the lung capacity yielded twenty minutes after birth 17 cc., three and a half hours after birth 21 cc., six hours after birth 36 cc. The depth of inspiration acquires a considerable increase between the first and second day, but many days pass before complete expansion of the lungs occurs. Peiser attributes this circumstance to the incomplete development of the nervous system, to the relatively slight reaction of the respiratory center to the irritation of CO_2, and to the fact that infants move very little and therefore the muscular system only produces in very small amount those irritant substances which stimulate the respiratory center. The expansion of the lung is longer delayed in debilitated and premature infants. . . . Pneumonia, which is very apt to supervene when the risk of infection exists in the atelectatic portions of the lung, is a very frequent cause of death in premature infants. . . . The treatment of atelectasis must be directed toward expanding the lungs by stimulating deep respirations.

To this end cutaneous stimulation to cause the infant to cry is recommended in mild cases; while for the still-born all methods of stimulation and artificial respiration should be applied, although all are often ineffective. Von Reuss quotes statistics (p. 290) which indicate, contrary to a common belief, that mental defects are no more frequent in children who have undergone difficult and asphyxial birth than in those of quite normal birth. Among those resuscitated from stillbirth he says that from 20 to 30 per cent succumb to sequelae, especially in the first two days, while through the first week the mortality among such infants is seven times the rate of those born normally. In the majority of cases (p. 289) this "is due to atelectasis from insufficient expansion of the lungs" or to obstruction, added to which is "the danger of inflammatory lung complication in atelectatic parts of the lung."

The account which von Reuss gives of asphyxia and continued atelectasis, their causes and consequences is an admirable presentation of present knowledge and practice. The only thing lacking is an effective means of combating these conditions and saving life.

PNEUMONIA FROM ATELECTASIS

Recent developments along several distinct, but parallel, lines lend further strong support to the conception of the association of atelectasis and pneumonia. Coryllos and Birnbaum[5] have presented experimental evidence, which I can confirm from personal observation,[6] that even in an animal so resistant to pneumonia as the dog atelectasis furnishes a condition in which pulmonary infection readily develops. That pneumonia may originate in atelectasis, when induced in an adult, as these investigators have demonstrated, is a discovery of extreme importance. On the clinical side, recent evidence[7] from many surgeons and anesthetists demonstrates that atelectasis frequently occurs after abdominal operations and is the origin from which postoperative pneumonia develops. By the prevention of postoperative atelectasis in clinics where the prophylactic inhalation of carbon dioxide after every operation has been adopted as a routine, postoperative pneumonia has been virtually relegated to the class of preventable and prevented diseases.

Equally important collateral evidence is afforded by experience resulting from the study of carbon monoxide asphyxia.[8] Formerly pneumonia was a common and often fatal consequence of this form of asphyxia. The relation was long obscure; but it has become clear from the results of the modern inhalational treatment with a mixture of oxygen and carbon dioxide; for in cases so treated postasphyxial pneumonia almost never occurs. The oxygen overcomes asphyxia; but it is the carbon dioxide that induces deep breathing and thus eliminates the condition of the lungs from which pneumonia otherwise often develops.

A closely similar etiology is thus indicated in three conditions that have heretofore been regarded as quite unconnected: (1) anesthesia and postoperative pneumonia, (2) carbon monoxide asphyxia and postasphyxial pneumonia, and (3) asphyxia of the new-born, atelectasis and pneumonia. That fundamentally these three syndromes are essentially alike is demonstrated by the fact that the same prophylactic inhalational treatment is effective in clearing the lungs and preventing fatalities in all three.

Observations, now in progress, on the use of a similar inhalational treatment early in both lobar and bronchopneumonia in adults indicate that in these conditions also it is advantageous, not only to prevent cyanosis by means of oxygen but also to keep the lungs open by stimulating deeper breathing by means of carbon dioxide. The inhalation has been generally administered intermittently by means of the face mask of the H-H inhalator; but a small tent has now been specially designed for continuous inhalation. These observations are under the direction of Dr. J. J. Wittmer, supervising physician of the New York and Brooklyn Edison Companies, the Brooklyn company having made this treatment available not only to its own employees but also during the past year for other pneumonia cases in Brooklyn. The mortality among cases treated early with a mask before the tent was available has been 11 per cent.

In these four related conditions, that of carbon monoxide asphyxia is of especial interest in the present connection. There are now all told in American cities and industries several thousand rescue crews each equipped with an inhalator and trained to resuscitate the victims of carbon monoxide asphyxia by inhalation of oxygen and carbon dioxide. I receive reports of many of the cases so treated. There are frequent reports also of the resuscitation of the new-born, cases both of asphyxia livida and asphyxia pallida, and of the treatment of secondary failure of respiration, continuing atelectasis, and neonatal pneumonia. It was, in fact, by these reports that the discovery of the true nature of the asphyxia of the new-born forced itself on me. They show that the inhalational treatment is frequently successful in cases in which every other means has failed. They afford a clear demonstration

4. Von Reuss, A. R.: The Diseases of the New-Born, New York, William Wood & Co., 1929, pp. 304 ff. (Full literature.)

5. Coryllos, P. N., and Birnbaum, G. L.: Obstructive Massive Atelectasis of the Lung, Arch. Surg. **16**: 501 (Feb.) 1928; Bronchial Obstruction: Its Relation to Atelectasis, Bronchopneumonia and Lobar Pneumonia, Am. J. Roentgenol. **22**: 401 (Nov.) 1929; Lobar Pneumonia Considered as Pneumococcic Lobar Atelectasis of the Lung: Bronchoscopic Investigation, Arch. Surg. **18**: 190 (Jan.) 1929; Bull. New York Acad. Med. **4**: 384 (March) 1928; Alveolar Gas Exchange and Atelectasis: The Mechanism of Cas Absorption in Bronchial Obstruction, Arch. Surg. **21**: 1214 (Dec., part II) 1930.

6. Henderson, Yandell; Haggard, H. W.; Coryllos, P. N., and Birnbaum, G. L.: The Treatment of Pneumonia by Inhalation of Carbon Dioxide: I. The Relief of Atelectasis, Arch. Int. Med. **45**: 72 (Jan.) 1930.

7. Henderson, Yandell: Acapnia as a Factor in Postoperative Shock, Atelectasis and Pneumonia, J. A. M. A. **95**: 572 (Aug. 23) 1930.

8. Henderson, Yandell: The Dangers of Carbon Monoxide Poisoning and Measures to Lessen These Dangers, J. A. M. A. **94**: 179 (Jan. 18) 1930.

that this method of resuscitation is quite as effective and as specific for the asphyxia of the new-born as for asphyxia from carbon monoxide.

CARBON DIOXIDE AS THE STIMULUS FOR THE FIRST BREATH

This discovery is so completely in accord with present physiologic theory that it may now seem that it should have been anticipated from two classic papers: that of Miescher[9] published forty-five years ago, and that of Haldane and Priestley[10] published twenty-five years ago. Yet, when one reads Miescher's celebrated presentation of the overwhelmingly complex and difficult problem of the control of respiration, a problem still largely unsolved,[11] one ceases to wonder that through all these years no one demonstrated the truth of this inference from the theory of respiration. Instead, the nonbreathing new-born child down to the present day has been swung, chilled and spanked.

Our failure to see the simple truth as it applies to the first breath of life was really quite logical. There was an unanswerable argument against application to the new-born of the Miescher-Haldane theory of the chemical control of respiration. It was to the effect that an asphyxiated child certainly has in its blood a normal or even more than normal pressure of carbon dioxide; yet it does not breathe. If the sensitivity of the respiratory center is decreased, or even abolished, by accumulation of carbon dioxide in birth asphyxia, how then can it be carbon dioxide that normally sets respiration in operation at birth? The initiation of respiration under the chemical stimulation supplied by the blood appeared altogether improbable. No experimenter, obstetrician or pediatrician less bold than the rescue crews of the Chicago Fire Department, who, untroubled by theory, first demonstrated this point and called it to my attention, would have dared to administer carbon dioxide to an asphyxiated new-born child.

Furthermore, it was known that a moderate deficiency of oxygen such as occurs at altitudes in the Rocky Mountains, Alps, Andes and Himalayas does not depress the sensitivity of the respiratory center. On the contrary, as found by the Pike's Peak Expedition,[12] and confirmed by many other observers since, the sensitivity of the respiratory center is much more acute under a low barometric pressure than at sea level. Respiration is greatly increased; the alveolar carbon dioxide pressure is lowered; and the time that the breath can be held voluntarily is considerably shortened. Similarly in carbon monoxide asphyxia the subject breathes excessively and blows off his own carbon dioxide to such an extent that acapnia is added to anoxemia.

There are many drugs and other influences which first stimulate a living organism and then depress its functions. But there was nothing in the effects of low oxygen on mountains or in mines, nor in those of carbon monoxide poisoning, to suggest that asphyxia may decrease the sensitivity[13] of the respiratory center to carbon dioxide. No one had observed or suggested that an asphyxiated respiratory center requires a higher pressure of carbon dioxide than normal to induce and maintain its activity.

It has long been known that respiration may be depressed by excess of carbon dioxide. Some of the earliest investigators failed to discover that carbon dioxide is a respiratory stimulant, because they used excessive amounts in their experiments and obtained only depression. All modern observers seem to agree that, up to about 10 per cent, increasing amounts of carbon dioxide in the inhaled air stimulate the respiration of a normal man or animal increasingly, but that above 10 per cent a depressant effect is induced, which with percentages around 15 or 20 passes into narcosis, and at 30 or higher may cause death. But it is really surprising that, as we now find, a center which has been depressed in this way is susceptible of being stimulated to virtually normal activity by inhalation of carbon dioxide.

Some evidence on this subject is afforded by experiments of Henderson and Haggard,[14] who found that when dogs were subjected for a considerable time to atmospheres containing a normal amount of oxygen, with a high partial pressure of carbon dioxide, not only was there an accumulation of carbon dioxide in the blood but the blood alkali also rose. This compensatory increase of the blood alkali necessarily tended gradually to decrease the sensitivity of respiration to carbon dioxide. In one animal that was kept breathing normal air plus amounts of carbon dioxide increasing gradually from 6 up to 20 per cent during five hours, the carbon dioxide capacity, or alkali reserve, rose from 50 to 74: "When the animal was finally allowed to breathe normal air again its respiration ceased after a few breaths and a fatal apnea followed. Apparently the alkali content of the blood had been raised so high that when the abnormally high pressure of carbon dioxide was withdrawn the respiratory center lacked an adequate stimulus."

Whether or not something of this sort occurs in men and animals who are drowned and in infants during prolonged birth is not known. It seems probable that, in such short exposures to excess of carbon dioxide as occur in drowning, the depression of sensitivity must be in the center itself rather than in any increase of blood alkali.

DEPRESSION OF THE RESPIRATORY CENTER BY ASPHYXIA

It is not the logic, but the evidence, that has been deficient and misleading. Success in resuscitation of the new-born by the inhalational method has now demonstrated that, contrary to current assumption, a partially asphyxiated respiratory center will respond to stimulation by carbon dioxide. But after asphyxia more than a normal pressure of carbon dioxide is required to induce the center to become active. Its sensitivity to chemical stimulation is greatly altered in degree but not in character.

In the normal child the respiratory center is sufficiently sensitive, so that breathing is induced under the

9. Miescher, F.: Bemerkungen zur Lehre von den Athembewegungen, Arch. f. Anat. u. Physiol. Abt. 1885, p. 355; reprinted in Die histochemischen u. physiologischen Arbeiten von Friedrich Miescher, Leipzig, 1897, pp. 261-295.

10. Haldane, J. S., and Priestley, J. G.: Regulation of the Lung Ventilation, J. Physiol. **32**: 225 (May 9) 1905. Haldane, J. S.: Respiration, Yale University Press, 1922.

11. An admirably complete and judicial discussion of the control of respiration is given by Dauterebande, L.: Les echanges respiratoires: Les problems biologiques XIV, Les presses universitaires de France, Paris, 1930. See also Henderson, Yandell: The Principles Controlling Respiration in Health and Disease, Practitioners' Series, New York, D. Appleton & Co., to be published.

12. Douglas, C. G.; Haldane, J. S.; Henderson, Yandell; and Schneider, E. C.: Physiological Observations Made on Pike's Peak, Colorado, with Special Reference to Adaptation to Low Barometric Pressures, Phil. Tr. Roy. Soc. London, Series B, **203**: 185-318, 1912.

13. A diagrammatic expression of the relation of the sensitivity, or "threshold," of the respiratory center to the pressure of carbon dioxide, may be found in Henderson, Yandell; and Scarbrough, M. M.: Acapnia and Shock: VI. Acapnia as a Factor in the Dangers of Anesthesia, Am. J. Physiol. **26**: 268 (June) 1910.

14. Henderson, Yandell; and Haggard, H. W.: Respiratory Regulation of the CO_2 Capacity of the Blood: I. High Levels of CO_2 and Alkali, J. Biol. Chem. **33**: 333 (Feb.) 1918.

stimulus merely of the carbon dioxide supplied by the child's own respiratory metabolism. Observations on nonbreathing infants show that under prolonged asphyxia the respiratory center undergoes a loss of sensitivity analogous to that known to be induced by morphine. The center then requires a stronger chemical stimulus than the body can supply. It responds in quite normal fashion, not to the normal pressure of 5.5 per cent of carbon dioxide but only to 7, 10, 15 or 20 per cent of carbon dioxide, according to the degree to which its sensitivity has been reduced by asphyxia.

Until this point was covered by decisive evidence it could not logically be asserted, as it can now, that in the normal child breathing is induced under the stimulus of its own carbon dioxide and that a partially asphyxiated new-born child is not stimulated to breathe when it is swung or chilled or spanked, but only when the chemical stimulus to its respiratory center becomes sufficiently strong to induce activity.

EVIDENCE FROM DROWNING AND INTRACRANIAL HEMORRHAGE

Support for this conception is afforded by the reports of bathing and boating accidents which I have collected and which show that a similar depression of the respiratory center occurs in the victims of drowning. Although the body of a drowned person doubtless contains more than a normal amount of carbon dioxide, it is insufficient to overcome the depression and to stimulate the center again to spontaneous activity. But the center is not paralyzed; given a renewed supply of oxygen, it responds to the chemical stimulus of carbon dioxide, for the reports of many resuscitations that have come to me show that the administration of carbon dioxide in oxygen is a powerful aid to artificial respiration in restoring natural breathing.

A similar depression of breathing sometimes occurs also during a slow intracranial hemorrhage after an operation on the brain. It was shown by White [15] that this depression of breathing could be combated and life saved by stimulating respiration by inhalation of carbon dioxide diluted in air. This fact is particularly significant in the present connection, for secondary failure of respiration in the new-born is frequently due to intracranial hemorrhage. Sword [16] has found that, in those infants in which secondary failure of respiration is probably due to intracranial hemorrhage, inhalational treatment is often effective.

INHALATIONAL RESUSCITATION OF THE NEW-BORN

A previous paper [17] in THE JOURNAL presented the evidence then available on resuscitation of the new-born. It came largely from the rescue crews of city fire departments and need not be here repeated. But the evidence that has accumulated in the three years since may be briefly summarized. For it I am indebted to a number of obstetricians who have now given up the ancient methods of treating neonatal asphyxia and have adopted the inhalational method. Their statements are unanimous to the effect that, in cases similar to those in which formerly breathing was started only after an anxious struggle and considerable manhandling of the child, respiration starts readily once the lungs are moderately dilated with a mixture of oxygen and carbon dioxide. In every hospital, so far as I can learn, in which the inhalational method of resuscitation has been tried it has now replaced the older procedure and has resulted in a distinct decrease of mortality. Furthermore, it is found that secondary failure of breathing some hours or days after birth, a condition before which the physician was formerly practically helpless, is now easily and effectively overcome. In the pediatric department of one large hospital, which has kindly given me a report, such cases as those which Cruickshank described have been extremely rare since the inhalation method was introduced.

TYPES OF INHALATOR

For use in resuscitation alike of adults and of infants in all forms of asphyxia, the so-called physicians' type of the H-H inhalator [18] is the most generally serviceable portable apparatus. It was with this apparatus that most of the evidence recorded in this paper has been obtained.

For use only on infants, a simple inhalator was figured in a previous paper.[17] A convenient portable inhalator for infants is that of Foregger.[19] It consists of a cylinder of oxygen and carbon dioxide, a yoke having a finely adjustable regulating needle valve, a wash bottle, and a soft rubber bag connected to a light mask of metal or celluloid. It is best to use a mask large enough to enclose the entire face of the infant, not merely the nose and mouth, fitted with an inflatable rubber rim so that it can be held on the face as nearly air-tight as possible. All that is absolutely essential is a mask and rubber bag, such as those just described, with shut-off, or obturator, valves at each end of the bag. The bag is filled as needed from a cylinder of the gas mixture.

For premature infants especially it is often best to use a small chamber, a box heated from below, and with a glass top. A convenient apparatus of this type has been introduced in England by McIlroy.[20]

Expert anesthetists, who use their anesthesia apparatus also for resuscitation, find the most convenient mixture of gases for use in a wide variety of conditions —anesthesia, carbon monoxide poisoning, cerebral hemorrhage, birth asphyxia, morphine poisoning, persistent hiccup—to be 25 per cent carbon dioxide and 75 per cent oxygen. This mixture is not used in full strength in any but desperate cases; it is usually diluted to any desired degree with pure oxygen from another cylinder. The use of high percentages of carbon dioxide, that is, above 10 per cent, is probably unwise except for those with skill and experience; yet they permit a saving of a few lives that cannot be effected with lower percentages; for the deeper the asphyxial depression, the higher the percentage of carbon dioxide required to induce breathing. Lower percentages, of which 7 per cent is generally best, are wholly safe even in inexperienced hands, and in the large majority of cases afford a quite adequate stimulation.

USE OF AN INHALATOR ON THE NEW-BORN

If the child makes no spontaneous respiratory effort, artificial respiration is applied as follows: The rubber bag of the inhalator is filled with gas from the cylinder,

15. White, J. C.: Deetherization by Means of Carbon Dioxid Inhalations, Arch. Surg. **7**: 347 (Sept.) 1923.
16. Sword, B. C.: Personal communication to the author. But see Clinical and Laboratory Advantages of Carbon Dioxide in Anesthesia, Anesth. & Analg. **6**: 177 (Aug.) 1927.
17. Henderson, Yandell: The Prevention and Treatment of Asphyxia in the New-Born, J. A. M. A. **90**: 583 (Feb. 25) 1928; The Initiation of Respiration at Birth, Nature, Aug. 25, 1928.
18. Made by Mine Safety Appliances Company, Braddock, Thomas and Meade streets, Pittsburgh.
19. Made by the Foregger Company, 47 West Forty-Second Street, New York.
20. McIlroy, A. L.: A Method for the Induction of Respiration in the New-Born, Lancet **2**: 373 (Aug. 20) 1927.

which may then be shut off. The mask is held as nearly as possible air-tight on the face, while the bag is compressed quickly but gently with the hand for half a second or one second, so that the thorax of the child shows a slight expansion. This gentle compression of the bag is repeated every two or three seconds, so that the expansion of the chest is effected in a succession of small steps. If, after the thorax is thus somewhat inflated, no expiratory movement occurs, a gentle pressure is applied with the hand on the sides of the child's chest to produce expiration. The pressures on the bag are then renewed for three or four gentle inspirations, and followed by a gentle compression of the chest by hand; and this process is repeated from four to six times a minute.

Generally, under this treatment, natural breathing soon develops. The mask is then held continuously on the face for ten minutes or until full deep breathing is established. Rebreathing is no disadvantage, for the amounts of oxygen that an infant consumes and of carbon dioxide that it produces are small in comparison to the size of the breathing bag of the inhalator.

Every child, even the most normal, should have a ten minute inhalation at least three times a day during the first few days of life as a prophylactic measure against atelectasis and pneumonia. In a child that receives this inhalation the various devices heretofore used to make the child expand its lungs by crying, such as stinging the soles of its feet with a rubber elastic band and the like measures, may be omitted.

THE USE OF A RESPIRATOR

The question is often raised whether some mechanical or automatic device for artificial respiration is desirable for treatment of the new-born. The answer is an emphatic negative. If an asphyxiated child can be resuscitated at all, it requires only a short period of artificial respiration but without the delay involved in adjusting an elaborate device. A simple mask with a breathing bag that can be compressed by hand to afford inspiration and manual pressure on the chest for expiration are quite as effective as any more complicated apparatus can ever be, and without the risk of injury to the lungs which such apparatus involves. The purpose of artificial respiration for the new-born should be to draw into the lungs a mixture of oxygen and carbon dioxide sufficient to relieve asphyxia, to set natural breathing in operation, to induce the child to dilate its lungs and overcome atelectasis. In other words, the object is to get the child to breathe vigorously for itself.

These statements refer particularly to such apparatus as the pulmotor and lungmotor. The Drinker respirator,[21] recently introduced, belongs to a different class of apparatus and has an important place. It is primarily designed to maintain long continued artificial respiration in cases of diphtheritic paralysis and poliomyelitis. For this purpose it is extremely useful and indeed life saving.

INTRODUCTION OF INHALATIONAL TREATMENT

The new knowledge reviewed here regarding the initiation of respiration and the risks of unrelieved atelectasis will be of little value unless put to use. Unfortunately, inhalational treatment does not introduce itself like arsphenamine or insulin. Experience shows that many physicians will not provide themselves beforehand with the necessary apparatus and that even hospital superintendents are reluctant. In order to attain maximal effectiveness, inhalational treatment of the new-born will need to be required by law.

As a preliminary to legal enforcement, it is essential that some agency in each city should provide itself with infant inhalators and supply them to physicians and midwives at a rental for each case sufficient merely to cover the cost of the small amount of the gas used. The city health department is obviously the proper agency to supply the inhalators, to give the necessary simple instructions to midwives, and to maintain some degree of supervision over the respiratory prophylaxis of the new-born outside of hospitals.

CONCLUSIONS

The natural stimulus initiating breathing in the normal child at birth can now for the first time be stated on sufficient evidence to be the carbon dioxide produced in its own body. While physiologic theory for many years past has suggested this view, the objection could not be overcome that a nonbreathing child probably has a higher pressure of carbon dioxide in its blood than one that breathes spontaneously. The evidence from the effects of inhalation, as set forth in this paper, clears away this objection. It shows that the asphyxiated respiratory center of the new-born, or of a drowned person, requires a much higher pressure of carbon dioxide than does a normal center to stimulate it to respiratory activity.

This conclusion, which now seems so simple, is in reality the result of a long succession of arduous, abstract and theoretical studies on the meaning and control of respiration by many investigators, not only in modern times but during generations and centuries past.[22]

For the asphyxiated new-born child, dilation of the lungs with a mixture containing a sufficient amount of carbon dioxide in oxygen to stimulate natural breathing is the one really effective method of resuscitation.

Inhalation of this mixture[23] is equally important for many children that breathe spontaneously; for among these cases incomplete dilatation of the lung is a common condition, predisposing to pneumonia and causing nearly as large a mortality as stillbirth itself. This inhalation should therefore be administered not only to those infants who require it for resuscitation from asphyxia but to all children, even to those that appear entirely normal, during the first few days of life as a prophylaxis against continuing partial atelectasis, secondary asphyxia, and pneumonia.

Every maternity hospital should be equipped with at least a simple inhalator for the new-born, or better with an inhalator suitable for infants and adults as well, so that the mother may also be treated when an anesthetic or narcotic has been used. For deliveries outside of hospitals the city health departments should provide simple infant inhalators to be rented to obstetricians and midwives for the cost merely of the oxygen and carbon dioxide consumed. After a reasonable period of education for obstetricians, midwives and nurses, a legal requirement similar to that for the prophylaxis of blindness should be established. Only under such requirement will the inhalational prophylaxis of atelectasis come into such general use that it may save the greatest possible number of lives.

4 Hillhouse Avenue.

21. Drinker, Philip; Shaughnessy, T. J., and Murphy, D. P.: The Drinker Respirator, J. A. M. A. 95: 1249 (Oct. 25) 1930.

22. Fulton, J. F.: Selected Readings in the History of Physiology, Baltimore, C. C. Thomas, 1930.

23. In practice this mixture is called "carbogen"; "7 per cent carbogen" is 7 per cent carbon dioxide and 93 per cent oxygen.

THE FEEDING OF GASTRIC TISSUE IN THE TREATMENT OF PERNICIOUS ANEMIA*

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Castle and Locke[1] fed muscle meat to normal persons, recovered the meat by causing vomiting, and refed it to patients who had pernicious anemia, thus causing a response of reticulated erythrocytes, an increase in the number of erythrocytes, and clinical improvement similar to that found when liver or its extract was used.

This work led Sturgis and Isaacs,[2] in collaboration with Sharp,[3] to try the effect of feeding desiccated gastric tissue to patients who had pernicious anemia, with results similar to those obtained with liver or its extract. Likewise, Castle and Locke's work led me to feed raw gastric tissue to patients who had the disease, with results which already have been reported in six cases,[4] and which were similar to those obtained with liver and liver extract. Another fact which suggested the use of gastric tissue was that I[5] had found that in approximately 26 per cent of 154 relatives of more than 100 patients who had pernicious anemia, the gastric content lacked free hydrochloric acid. Eighty per cent of these tests were made by the fractional method. This fact, and the achylia found in practically every case of pernicious anemia, served to fix attention on the stomach as a possible etiologic factor and made the feeding of gastric tissue seem a logical procedure. Wilkinson,[6] also, was influenced by Castle and Locke's work to carry out similar experiments in cases of pernicious anemia. He fed both raw and desiccated gastric substance, with similar results. Snapper and Dupreez,[7] Renshaw[8] and Rosenow,[9] following these original workers, have reported similar results of feeding the same material.

I have prescribed treatment with gastric tissue of swine in some form, or with honeycomb tripe (pickled gastric tissue of cattle), for sixty patients. Certain of these were excluded from this study. For example, four patients whose treatment consisted mainly of tripe were not included. Two were not considered in this paper because the treatment with gastric tissue of swine was discontinued in a few days, in one case because of poor cooperation on the part of the patient, and in the other because the patient's relatives wished to take him home on account of marked neurologic symptoms, for relief of which I could promise nothing. Two of the remaining fifty-four patients were fed swine stomach after failure of treatment with tripe, and five were sent home for treatment without having been treated at the clinic. One has been under treatment only a few days at the diet kitchen. The remaining forty-six patients were under careful observation in the hospital and are included in the detailed study.

Sixteen of these forty-six patients were fed raw whole stomach of swine exclusively, six raw mucous membrane of the entire stomach with other meat, two the same without other meat, two, raw whole pyloric portion, two raw whole fundus, and one patient raw entire gastric wall save mucosa without other meat. Three patients were given whole stomach dried in our own laboratory, and six a preparation of desiccated hog stomach according to the method described by Sharp and by Sturgis and Isaacs. Eight patients were given various combinations of these, including, also, mucous membrane dried by one of the packers. These combinations were made because of temporary exhaustion of the supply of one or another substance, because of greater ease in taking one than another, or because of the difference in expense. The results of the use of all these different preparations are considered as a unit, as the results were so similar. The results with tripe are not included in this report, for they were inconsistent and unconvincing. It can be said, however, that the effects of tripe were much inferior to those with raw or dried gastric tissue of swine. When entire gastric wall was used, from 240 to 480 Gm. daily was given, whereas half this amount was given when mucous membrane alone was used. A corresponding amount of the dried material was used, making allowance for shrinkage to a sixth or a seventh of the original weight in the process of desiccation. The raw material, after it was ground in a seprasieve, usually was given in orange, tomato, cranberry or other fruit juice, and the dried material was given in fruit juice or water, as preferred. The taste or smell of the raw stomach was not objectionable to most patients.

In most instances a regular hospital diet was administered also, but in a few cases other meat of any kind was not allowed. Significant difference was not noted as a result of eliminating other meat. In one case, in which that part of the gastric wall employed consisted of 240 Gm. of mucosa only, without other meat, but with 100 Gm. of other proteins, mostly of animal origin, the proportion of reticulated erythrocytes increased from 0.8 per cent to 33.4 per cent in eight days; and in another, similarly treated, they increased from 0 per cent to 10.6 per cent in six days. In one case in which entire gastric wall except mucosa was given, the proportion of reticulated erythrocytes increased from 0 per cent to 33.8 per cent in seven days. In this case, other meat was not given. It is possible that the mucosa, before it was removed, may have exerted some action on the muscular coat which made it effective, but it seems unlikely that the minute amount of muscle in the muscularis mucosae could produce any large part of the effect in those who were fed mucosa only without other meat. In two cases, the remainder of the diet was selected for its high content of vitamins but did not include liver. In only two cases was hydrochloric acid used. A further trial of hydrochloric acid in conjunction with the feeding of gastric tissue will be made.

Cooked gastric tissue was used in only one case, because Castle had shown that the substance which

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1. Castle, W. B., and Locke, E. A.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia, J. Clin. Investigation **6**: 2-35, 1928.
2. Sturgis, C. C., and Isaacs, Raphael: Desiccated Stomach in the Treatment of Pernicious Anemia, J. A. M. A. **93**: 747-749 (Sept. 7) 1929.
3. Sharp, E. A.: An Antianemic Factor in Desiccated Stomach, J. A. M. A. **93**: 749 (Sept. 7) 1929.
4. Conner, H. M.: The Treatment of Pernicious Anemia with Raw and Cooked Swine Stomach, J. A. M. A. **94**: 388-390 (Feb. 8) 1930; Abstr. Proc. Staff Meetings of Mayo Clinic **4**: 319 (Oct. 30) 1929.
5. Conner, H. M.: Hereditary Aspect of Achlorhydria in Pernicious Anemia: A Study of Gastric Acidity in 154 Relatives of 109 Patients Having Pernicious Anemia, Abstr. Proc. Staff Meetings of Mayo Clinic **4**: 200-202 (June 26) 1929; J. A. M. A. **94**: 606-612 (March 1) 1930.
6. Wilkinson, J. F.: Pernicious Anemia: Preliminary Reports on Results Obtained by Treatment with Certain Preparations of Stomach, Brit. M. J. **1**: 236-239 (Feb. 8) 1930.
7. Snapper, I., and Dupreez, J. D. G.: Traitement de l'anémie pernicieuse par l'estomac de porc desséché et pulvérisé, Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 662-665 (April 21) 1930.
8. Renshaw, Arnold: Treatment of Pernicious Anemia with Desiccated Hog's Stomach, Brit. M. J. **1**: 334-335 (Feb. 22) 1930.
9. Rosenow, G.: Behandlung der perniziösen Anämie mit getrocknetem Schweinemagen, Klin. Wchnschr. **9**: 652-653 (April 25) 1930.

caused the favorable reaction was thermolabile.[10] Before any effect was obtained, because of marked vomiting, administration of cooked gastric tissue was discontinued and desiccated hog stomach was administered instead. This case was not included in the table of results. Only one patient was given transfusions, two in number. This patient probably made the poorest response in the whole group. The results of the use of desiccated hog stomach were so unsatisfactory in this case that liver extract was substituted, after which there was better response.

The effects on the blood are best considered by dividing the cases into groups according to the number of erythrocytes in each cubic millimeter of blood when the treatment was instituted, as follows: group 1, less than 1,000,000; group 2, between 1,000,000 and 2,000,000; group 3, between 2,000,000 and 3,000,000, and group 4, between 3,000,000 and 4,000,000.

The percentage of reticulated erythrocytes among all erythrocytes, which is almost universally accepted as the criterion by which regeneration of blood is judged, increased most markedly in the cases in which the treatment was started when the number of erythrocytes was small. In cases in which the erythrocytes numbered more than 2,000,000 in each cubic millimeter of blood, the increase in the percentage of reticulated erythrocytes was not so great, and in those in which erythrocytes numbered more than 3,000,000, only moderate or slight increase in the percentage of reticulated erythrocytes was seen. In the whole group, the proportion of reticulated erythrocytes rose to a maximum of 65.8 per cent in one case; to 40 per cent in one; to between 30 and 40 per cent in six cases; to between 20 and 30 per cent in five, and to between 10 and 20 per cent in thirteen. The proportion of reticulated erythrocytes of 65.8 per cent is the highest I have ever observed in a case of pernicious anemia under any form of treatment. The patient in this case received half a pound daily of the entire thickness of the wall of the pyloric portion of the stomach only. In the group of patients whose treatment was started when the erythrocytes numbered less than 1,000,000, the proportion of reticulated erythrocytes increased to an average maximum of 24.3 per cent[11] in eight and three-fourths days; the number of erythrocytes from 910,000 to 2,040,000 and the concentration of hemoglobin from an average of 18.8 per cent to 44 per cent in nineteen days. In those whose treatment was started when the erythrocytes numbered between 1,000,000 and 2,000,000 the proportion of reticulated erythrocytes increased to an average maximum of 22.8 per cent in nine and a half days; the number of erythrocytes from 1,510,000 to 2,800,000 and the concentration of hemoglobin from 32.8 to 56.5 per cent in an average of twenty-one and one-fourth days.

In the group of patients whose treatment was begun when the erythrocytes numbered between 2,000,000 and 3,000,000, the proportion of reticulated erythrocytes increased to an average maximum of 6.9 per cent in approximately eight days; the number of erythrocytes from 2,350,000 to 3,510,000 and the concentration of hemoglobin from 52 to 71 per cent in an average of nearly twenty-five days. In those whose treatment was started when the erythrocytes were between 3,000,000 and 4,000,000 the proportion of reticulated erythrocytes increased to an average maximum of 3.6 per cent in seven days, the number of erythrocytes from 3,360,000 to 3,710,000, and the concentration of hemoglobin from 70 to 76 per cent in an average of nineteen and a half days. The two instances in which the proportion of hemoglobin was estimated before treatment as grams in each 100 cc. of blood were left out of consideration in figuring the average. Most of those patients who had a high proportion of hemoglobin and a large number of erythrocytes when treatment was started had marked neurologic symptoms. In many cases the number of erythrocytes decreased for a few days after treatment was started before sufficient time had elapsed to obtain any effect. If the increase should be figured from the lowest level obtained after treatment was instituted, the figures for the average increase in the number of erythrocytes in the several groups would be from 13 to 26 per cent higher. At the last report, either by letter or by examination at The Mayo Clinic, the highest number of erythrocytes in any case of the whole group was 6,000,000, the lowest 2,800,000, and the average 4,394,000; the highest percentage of hemoglobin was 100, the lowest 65, and the average 80.86. In several instances the increase in the proportion of reticulated erythrocytes was delayed much beyond the average, and in several it was prolonged over several days instead of reaching a sharp peak from which it fell rapidly. The number of leukocytes in the whole group increased from an average of 4,873 to one of 6,464 and the platelets from 101,540 to 118,000.

In the blood smears, after treatment, diminution or disappearance of the macrocytosis and anisocytosis was seen, and also disappearance of nucleated erythrocytes in cases in which they had been present. In some instances the distribution and character of leukocytes returned to normal, but in others the shift to the right remained as the only morphologic evidence of pernicious anemia.

The most marked effect on the symptoms was noted in those cases in which the patients were sickest and who had the smallest number of erythrocytes at the time treatment was started. The color of the skin rapidly changed from the usual lemon yellow to a simple pallor, and later to normal; the icteric hue of the sclerotics usually disappeared in a relatively short time. The weakness, anorexia, dyspnea and edema usually subsided rapidly. Gastric symptoms ordinarily were relieved, but not with such great regularity. The soreness of the tongue usually disappeared, and the diarrhea usually, but not always, subsided.

A questionnaire was sent to twenty-eight of the forty-six patients, of whom twenty-six answered more or less completely. Those to whom a questionnaire was not sent had been treated in the hospital so recently that such a procedure seemed useless, or else they were still under observation in the hospital. Nineteen patients reported regular, and seven irregular use of the diet. Twenty-two reported no trouble in taking the gastric material, and four slight trouble. One patient reported himself to be well and twenty-five reported themselves to be improved. Eight stated that they had had diarrhea at some time before treatment, whereas eighteen had none. Of these eight patients, four were well and the condition of four had improved. One patient reported that weakness had disappeared, twenty-one that weakness was less marked, one that the weakness was the same as before, and three did not make a statement in regard to weakness. Eighteen patients reported soreness of the tongue at some time before treatment, and eight that their tongues never had been sore. Nine of

10. Castle, W. B.: The Aetological Relationship of Achylia Gastrica to Pernicious Anemia, Proc. Roy. Soc. Med. **22**: 1214-1216 (June 11) 1929.

11. In one case there was a belated increase in the average proportion of reticulated erythrocytes to 26.2 per cent. This increase occurred after the tabulation had been prepared and to try to include this belated increase would have been impracticable.

the eighteen were well after treatment, seven were improved, and two were the same as before. Eighteen patients reported that the appetite had been normal since treatment, five that it was improved, and three that it was the same as before. Twenty-three patients reported no relapse, whereas three patients reported having had a slight relapse while under treatment. Seven reported normal activity, ten restricted activity, and eight that they were not working; one did not report in regard to activity.

three that it was the same as before, and none that it was worse. Nineteen reported that they had suffered from lack of control of the limbs in walking before treatment. One patient reported disappearance of this symptom, and twelve patients its improvement; six were the same as before, and none were worse since treatment was instituted. The figures as to lack of control of the limbs are probably much too high as to incidence. It is probable that in some of these the supposed lack of control was due simply to weakness. Patients who had

Erythrocytes in Each Cubic Millimeter of Blood at Beginning of Treatment

		Beginning of Treatment in Hospital					End of Treatment in Hospital					Highest Proportion of Reticulated Erythrocytes	
Case	Days in Hospital	Hemoglobin, per Cent (Dare)	Erythrocytes in Each Cubic Millimeter of Blood, Millions	Leukocytes in Each Cubic Millimeter of Blood	Platelets in Each Cubic Millimeter of Blood, Thousands	Reticulated Erythrocytes, per Cent	Hemoglobin, per Cent (Dare)	Erythrocytes in Each Cubic Millimeter of Blood, Millions	Leukocytes in Each Cubic Millimeter of Blood	Platelets in Each Cubic Millimeter of Blood, Thousands	Reticulated Erythrocytes, per Cent	Per Cent	Days After Treatment Was Begun
Less Than 1,000,000													
1	27	15	0.75	3,000	60	1.4	55	2.78	4,800	140	2.6	39.2	8
2	29	20	0.93	1,700	46	2.0	58	2.81	2,800	120	4.67	21.2	8
3	11	20	0.98	2,800	32	0.8	35	1.44	4,800	60	23.4	33.4	10
4	9	20	0.99	1,400	96	0.1	28	1.13	3,000	30	3.2	3.2*	9
Average	19	18.8	0.91	2,225	58.5	1.1	44	2.04	3,850	87.5	8.5	24.3	8.75
Between 1,000,000 and 2,000,000													
5	27	38	1.62	4,100	90	0.3	58	3.32	4,900	100	0.9	35.6	8
6	34	34	1.37	5,300	120	3.6	65	3.78	5,900	240	0.2	7.8	4
7	27	45	1.97	4,700	160	0.7	75	3.80	8,800	150	...	7.2	6
8	27	18	1.07	3,400	40	3.6	55	2.77	7,300	64	0.8	16.8	7
9	24	40	1.95	7,400	160	0.8	60	3.29	7,000	70	1.0	14.3	10
10	20	42	1.96	5,400	120	4.0	68	3.36	.....	60	2.2	5.9	6
11	21	30	1.32	5,500	80	...	68	3.06	7,400	100	3.0	13.6	9
12	21	40	1.88	4,200	180	0.1	70	2.98	7,500	120	3.8	23.6	11
13	35	30	1.42	2,200	120	0.9	50	2.73	6,000	146	4.5	32.0	28
14	25	35	1.50	3,000	...	0.5	70	3.14	10,100	100	2.2	35.2	8
15	27	20	1.04	1,700	52	0.1	44	1.86	3,200	36	5.2	13.4	14
16	33	38	1.66	5,000	120	4.0	68	3.84	9,100	120	...	9.8	5
17	21	28	1.31	3,200	200	3.2	68	3.25	4,600	180	1.6	18.2	7
18	25	28	1.21	5,200	80	1.6	40	1.62	4,800	190	24.2	24.2	25
19	22	40	1.59	4,800	120	1.0	75	3.08	9,000	200	2.6	10.8	8
20	15	32	1.86	2,800	98	0.5	38	2.67	5,800	40	9.4	40.0	8
21	21	8.05 Gm.	1.63	6,700	60	3.1	65	3.37	8,000	80	7.27	19.4	9
22	30	35	1.53	1,800	44	1.0	58	3.23	3,200	180	5.0	39.0	8
23	11	20	1.13	2,400	60	3.2	48	2.07	4,200	100	44.0	65.8	7
24	13	35	1.53	.....	...	1.8	45	2.09	3,600	80	14.8	16.7	11
25	22	26	1.19	1,600	52	0.1	50	3.16	5,800	160	3.4	32.0	8
26	9	38	1.42	3,000	140	3.2	40	2.07	9,800	104	10.8	16.8	8
27	7	30	1.34	6,000	144	1.4	35	1.35	6,200	80	31.0	31.0	9
28	7	45	1.89	3,000	100	1.6	65	2.75	.....	80	9.8	10.6	6
29	7	20	1.32	2,800	28	1.0	35	1.85	4,200	160	30.2	30.2	8
Average	21.24	32.8	1.51	3,966	102.9	1.65	56.5	2.80	6,100	117.5	8.7	22.8	9.5
Between 2,000,000 and 3,000,000													
30	21	48	2.30	5,800	80	1.4	72	3.00	11,000	120	1.5	6.7	5
31	45	60	2.67	5,400	140	1.5	70	3.95	6,800	120	2.0	6.2	12
32	26	48	2.20	10,800	96	1.1	65	3.37	5,000	100	0.5	11.3	8
33	30	48	2.01	4,200	120	2.1	75	3.45	6,300	40	.*.	7.0	4
34	33	50	2.25	6,300	56	2.2	68	3.37	7,700	220	1.8	5.4	8
35	34	43	2.14	14,100	40	0.4	60	3.56	10,900	40	0.1	4.7	10
36	21	50	2.20	6,000	120	1.0	75	3.38	7,400	120	2.4	6.0	7
37	14	65	2.79	4,900	80	1.1	70	4.28	8,200	120	0.6	1.8	8
38	16	8.8 Gm.	2.40	5,200	80	1.0	75	3.28	7,600	200	1.4	10.0	9
39	13	55	2.41	5,000	94	0.2	75	3.36	6,600	120	3.4	3.4	7
40	20	60	2.55	6,200	60	1.4	73	3.57	7,800	110	4.4	13.8	8
Average	24.81	52	2.35	6,718	88	1.2	71	3.51	7,755	119	1.6	6.9	7.8
Between 3,000,000 and 4,000,000													
41	41	75	3.57	6,400	120	0.2	83	4.20	7,500	160	1.5	3.8	9
42	18	70	3.62	5,000	140	0.6	80	4.20	8,200	80	1.2	2.8	9
43	10	70	3.49	7,000	100	0.4	70	3.21	5,900	100	5.5	7.2	8
44	32	58	3.14	9,500	180	0.7	70	3.69	8,500	180	1.0	1.9	5
45	5	75	3.34	6,000	260	0.3	80	3.73	8,100	200	0.8	0.8	
46	11	73	3.00	7,400	100	0.8	75	3.22	5,600	112	2.6	5.2	6
Average	19.50	70	3.36	6,883	150	0.5	76	3.71	7,300	139	2.1	3.6	7

* On the sixteenth day of treatment, 26.2 per cent of erythrocytes developed.

The effect on nervous symptoms has been less striking than that on the blood and general condition. In many cases the numbness and tingling has been improved; in some it has been abolished. Twenty-two patients have reported, by answers to questionnaires, that they had these symptoms before treatment; four have reported that they did not have them. Following treatment, five of these patients were rid of their paresthesia; fourteen reported that it was improved, true psychosis have not been treated, but minor mental symptoms have seemed to improve with treatment of the condition. In one case, loss of libido was marked before treatment, whereas libido was exaggerated after treatment.

Fractional analysis of gastric content after a test meal has been made in all cases before treatment. Achlorhydria was present in all. In eleven cases a test of gastric acidity after injection of histamine was made

before the patient left the hospital or at a later date. Free hydrochloric acid had not returned, nor was total acidity significantly increased in any case as the result of treatment.

Of the thirty-one cases in which the proportion of eosinophils was estimated both before and during, or after, treatment, in only ten was a higher percentage of eosinophils found during or after treatment than before. In only two cases was the increase so great that it appeared likely to be due to the treatment. The percentage of eosinophils was not as markedly increased in any case as it was by the feeding of raw liver. These data are not entirely in accord with those of Wilkinson, who reported that eosinophilia occurs after the use of gastric tissue. The absence of marked eosinophilia is additional evidence of the freedom from intestinal parasitosis, including trichinosis, among patients who use the raw material.

In order to investigate the possible transmission of parasites by the feeding of raw gastric tissue, the stools have been examined in most instances before, during and after the administration of the raw material. A parasite has not been found in the stool after treatment in any instance in which it was not present before. There is no parasite which inhabits the cavity or wall of the stomach of swine that is pathogenic for man, so far as I am able to determine. Trichinae do not occur in the gastric wall of swine. No patient is known to have contracted the porcine type of undulant fever as a result of the administration of raw stomach of swine.

COMMENT

Results with the different preparations of gastric tissue have been similar. However, not enough patients have been given pylorus alone, fundus alone, mucous membrane alone (with and without other meat), or whole stomach except mucosa to justify a statement that the effect of any of these fractions is exactly similar to that of whole stomach. In the cases in which mucous membrane alone was given, in two cases unaccompanied by other meat and in six with other meat, the response was satisfactory; also, in one case in which whole stomach except mucosa was given, a satisfactory effect was produced without the use of other meat. The dried material has the advantages of being easily available in city or country and of being of smaller bulk, but it has the disadvantage of being higher in price. The raw material has the advantage of being lower in price, and, to some patients, of being better in taste, but it has the disadvantage for some rural patients of being somewhat difficult to obtain and to keep. However, for rural homes, the invention of a cheap, practical refrigerator, operated by a kerosene flame, has now made the latter objection a minor one. Comparison of results with the different preparations and different amounts will be made the subject of a later contribution. The results with 240 Gm. of raw whole stomach make it appear that this is the average curative dose. Of desiccated hog stomach the curative dose usually was from 20 to 40 Gm.; ordinarily, about half the curative dose is required as a maintenance dose.

Ten patients had at some time been treated with liver, six with liver extract, and seven with both, either elsewhere or at the Mayo Clinic before institution of the treatment with gastric tissue. In almost all instances, however, the treatment with liver had been discontinued sufficiently long before the feeding with gastric tissue had been begun to make it relatively certain that none of the results obtained was a remnant of those following treatment with liver.

Among patients who answered the questionnaire, three had taken some liver since they had gone home; one patient, half a pound (225 Gm.) each day for two weeks while unable to get the gastric tissue; one, three slices a week, and one, a quarter pound (110 Gm.) every other day. Of course, in evaluating the results of feeding gastric tissue, one must be certain that the patient is not taking liver or its extract in any considerable amount.

No other treatment that is known to influence formation of blood was used in any instance, except two transfusions in one case, a diet rich in vitamins but containing no liver in two cases, and dilute hydrochloric acid in two cases. In one case in which moderate doses of liver extract had been taken for two years, with little improvement, there was seen a rapid increase in reticulated erythrocytes to 35.6 per cent, and a comparable increase in erythrocytes when raw stomach was fed. In another case, in which liver extract had been given for two years, with good results until recently, when there was a relapse, treatment with raw stomach is being given with satisfactory results. On the other hand, in one case there was poor response to desiccated hog stomach and good response to administration of liver extract.

The increase in percentage of reticulated erythrocytes and mature erythrocytes and the improvement in the general and neurologic symptoms are similar and apparently equal to those obtained by feeding liver or liver extract. The material also apparently has a mild effect of stimulating formation or liberation of platelets and leukocytes.

SUMMARY

Sixty patients who have pernicious anemia have been treated with gastric tissue of swine or with tripe. Two of those were given gastric tissue of swine after virtual failure with tripe, and tripe constituted the sole form of gastric tissue given to two. Forty-six of the patients have been carefully studied under observation in a hospital. Raw and dried preparations have given approximately equivalent results. The mucosa, the remainder of the stomach after the mucosa was removed, and whole gastric wall were used separately, and each proved effective in the cases treated. The presence of muscle meat was not required to obtain results in the two cases treated with mucosa without muscular coat or other muscle meat. Fundus and pylorus, each used separately, produced satisfactory if not equal results. The effects on the reticulated erythrocytes, mature erythrocytes, hemoglobin and leukocytes are similar to and apparently equivalent to those obtained by feeding liver or liver extract. The effects on the general and neurologic symptoms are apparently about the same as those obtained with liver or its extract. All patients so treated are alive so far as I know.

Challenging Civilization.—The behavior problems of children are not to be considered as essentially mental nor as prima facie evidence of mental disability or disease. In some ways, the delinquent is one of the challenging factors of civilization; he is an indicator of communal maladjustment. His problems are the problems of the community. He is striving for a personal satisfaction and harmony which in some way are at variance with the standards of the community. There are times, however, when the delinquency is wrong but the delinquent is right, just as there are times when the punitive action of a community may be right but the community itself may be ethically wrong.—Wile, I. S.: Behavior Problems of Children with Special Reference to Delinquency, *Am. J. Dis. Child.*, November, 1930.

THE TREATMENT OF SECONDARY ANEMIA

FURTHER OBSERVATIONS *

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AND
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This report deals with the comparative merits of iron, whole liver, liver extract and various combinations of these substances in the treatment of patients with anemia due to chronic hemorrhage or chronic chlorosis.

These two interesting types of secondary anemia frequently escape both recognition and treatment. The former is the result of the persistent loss of small amounts of blood over a long period of time. Such patients usually seek surgical advice because of menorrhagia or bleeding from the intestinal tract. The second type is not associated with any recognizable hemorrhage but occurs in young or middle-aged women and is characterized by a relatively low level of hemoglobin with an essentially normal red blood cell count.

Since the publication of a previous paper,[1] a new and more accurate method of studying anemia, recently

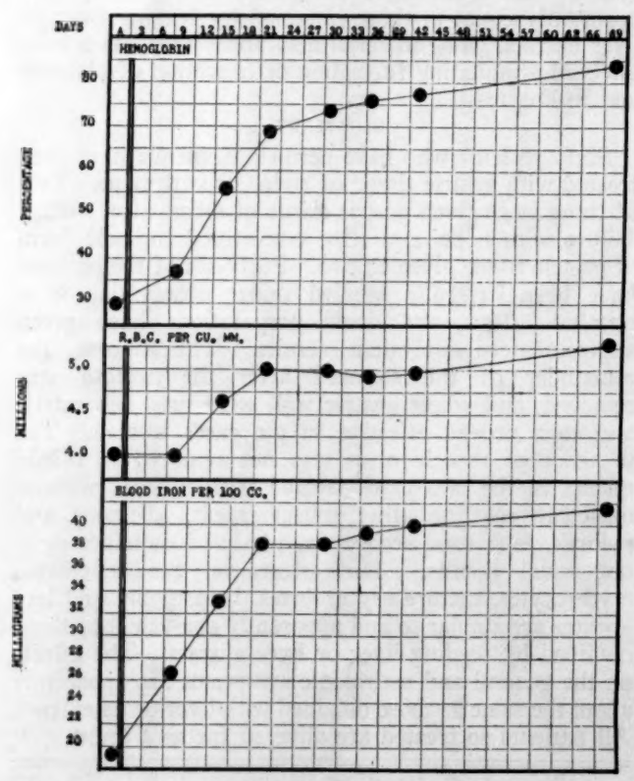

Chart 1 (case 1, table 1).—A graphic representation of the effect of iron on the blood of a patient with chronic secondary anemia. The double vertical line at the left of the chart indicates the beginning of treatment with iron.

utilized by Murphy, Lynch and Howard,[2] has been employed in this investigation. These authors used Kennedy's[3] procedure for determining the amount of iron contained in whole blood and found that this factor remains within singularly narrow and standard limits for normal adults. Any reduction of the blood iron below this level is indicative of anemia and, in fact, may be present before other symptoms can be detected. Consequently this factor is regarded as the most accurate criterion that has yet been devised for evaluating the true status of a patient with secondary anemia.

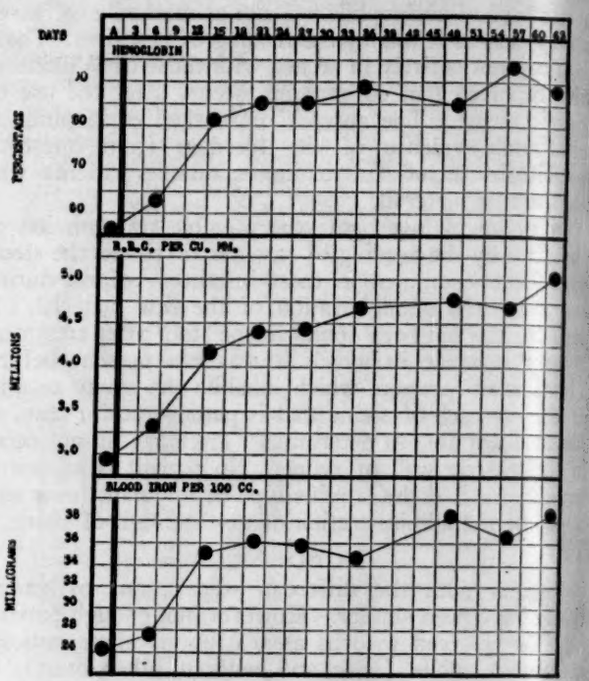

Chart 2 (case 11, table 2).—This patient was treated with iron and whole liver.

METHODS OF STUDY

Twenty-four patients were observed. For the purpose of comparative studies they were divided into four groups of six each. The patients in the first group received iron alone in the form of pills of ferrous carbonate, U. S. P., 1.8 Gm. daily. The second group received iron plus whole liver, from 100 to 240 Gm. daily. The third group received liver extract[4] alone (three vials daily) for from three to seven weeks, after which iron (1.8 Gm.) was administered in conjunction with the liver extract. The patients in the fourth group, after a similar control period on liver extract alone, were given in addition to the extract relatively small amounts of whole liver (from 90 to 120 Gm. daily) to determine whether or not these substances exert any synergystic effect on each other. Whipple[5] has suggested that small amounts of whole liver when given with liver extract may have such an effect.

The blood of each patient was studied at approximately weekly intervals by the following methods: Test tubes were prepared by evaporating to dryness therein 2 cc. of a 1.6 per cent solution of sodium oxalate. Ten cubic centimeters of venous blood was withdrawn and placed in one of these prepared tubes, which was gently tilted back and forth several times to insure complete solution of the oxalate. (At this point in the procedure

* From the Departments of Surgery and Medicine of the Peter Bent Brigham Hospital.
* This study was aided by a grant from the Proctor Fund of the Harvard Medical School for the study of chronic disease.

1. Murphy, W. P., and Powers, J. H.: The Value of Liver in the Treatment of Anemia Due to Hemorrhage, Surg. Gynec. Obst. **48**: 480 (April) 1929.
2. Murphy, W. P.; Lynch, R., and Howard, I. M.: The Value of Determinations of the Iron Content of Whole Blood, to be published.
3. Kennedy, R. P.: The Quantitative Determination of Iron in Tissues, J. Biol. Chem. **74**: 385 (Aug.) 1927.
4. Liver extract No. 343 (N. N. R.), Eli Lilly & Co.
5. Robscheit-Robbins, F. S., and Whipple, G. H.: Blood Regeneration in Severe Anemia, J. Exper. Med. **49**: 215 (Feb.) 1929.

it was considered important not to shake the tube in order that hemolysis and the formation of air bubbles might be avoided.) Standardized pipets were filled from this oxalated blood and the erythrocytes were counted in standardized chambers. Determinations of the percentage of hemoglobin were also made from this sample by the method of Sahli as modified by Osgood and Haskins.[6] The content of iron was determined by the procedure suggested by Kennedy,[3] because of the advantages of this method over that of other investigators.

The patients who received iron alone or in combination with whole liver improved most rapidly. The erythrocyte count, the percentage of hemoglobin, and the iron content of the blood responded promptly after treatment was instituted (tables 1 and 2). Improvement was persistent and constant until all three factors had attained their normal levels. In the interpretation of the iron figures, 37 mg. of iron per hundred cubic centimeters of blood may be regarded as the lower limit of normal.[2]

TABLE 1.—*Individual Determinations of the Red Blood Cell Count, the Percentage of Hemoglobin and the Blood Iron of Six Patients Treated with Iron Alone* *

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 1:													
Red blood cells	4.08	4.05	4.65	5.00	5.00	4.93	4.99	....	....	....	5.31	....	....
Hemoglobin...	30	37	56	69	74	76	77	..	..	..	84	..	..
Iron.....	19.4	26.9	33.2	40.7	38.5	39.4	40.0	....	....	....	41.8	....	....
Case 2:													
Red blood cells	4.46	4.98	4.95	5.17	5.09	....	....	5.20	5.10	....	5.09	....	5.14
Hemoglobin...	38	49	63	65	68	..	..	79	83	..	88	..	94
Iron.....	18.1	22.1	23.4	26.1	27.5	....	....	36.0	36.5	....	37.8	....	37.5
Case 3:													
Red blood cells	3.89	4.01	4.97	4.74	4.74	4.64	4.50	....	....	....	....	....	4.56
Hemoglobin...	59	68	69	77	77	80	74	..	..	..	..	..	87
Iron.....	28.0	33.3	30.4	36.1	42.2	41.5	45.5	....	....	....	....	....	41.4
Case 4:													
Red blood cells	4.09	3.89	4.26	....	4.64	....	....	....	5.00	....	....	....	....
Hemoglobin...	48	48	59	..	67	..	..	..	83	..	..	..	..
Iron.....	21.3	23.9	25.9	....	38.5	....	....	....	39.0	....	....	....	....
Case 5:													
Red blood cells	2.96	3.60	....	4.64	....	....	....	....	....	....	....	....	....
Hemoglobin...	55	70	..	84	..	..	..	..	..	..	..	..	..
Iron.....	25.2	30.6	....	44.0	....	....	....	....	....	....	....	....	....
Case 6:													
Red blood cells	2.16	....	2.45	....	....	....	3.53	3.88	4.09	....	....	....	....
Hemoglobin...	30	..	35	..	..	..	72	84	83	..	..	..	..
Iron.....	16.1	....	21.7	....	....	....	33.2	38.1	37.0	....	....	....	....

* The erythrocyte count is expressed in millions per cubic millimeter and the blood iron in milligrams per hundred cubic centimeters of whole blood.

TABLE 2.—*Individual Observations on Six Patients with Chronic Secondary Anemia Who were Treated with Iron and Whole Liver*

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 7:													
Red blood cells	2.98	3.38	....	3.94	4.37	4.14	4.66	4.56	4.99	...	....	....	4.56
Hemoglobin...	49	64	..	74	75	74	79	77	75	..	..	..	81
Iron.....	26.6	28.3	....	26.8	34.9	35.0	37.5	39.3	37.3	....	....	....	37.0
Case 8:													
Red blood cells	3.05	....	....	....	4.20	4.05	5.05	5.05	4.73	4.83	....	4.88	4.85
Hemoglobin...	33	..	..	..	62	54	60	73	80	82	..	86	96
Iron.....	17.6	....	....	....	23.4	24.6	27.8	30.0	35.4	34.2	....	36.9	41.1
Case 9:													
Red blood cells	3.85	4.29	4.62	4.75	4.49	6.03	....	5.23	....	....	....	....	....
Hemoglobin...	25	50	60	70	70	75	..	80	..	..	..	..	..
Iron.....	16.9	21.6	25.9	25.8	28.5	37.2	....	36.7	....	....	....	....	....
Case 10:													
Red blood cells	3.98	4.10	4.57	4.77	4.89	5.05	....	5.30	....	....	....	....	....
Hemoglobin...	40	45	50	63	63	65	..	85	..	..	..	..	..
Iron.....	19.0	20.1	23.0	26.0	30.2	34.5	....	38.0	....	....	....	....	....
Case 11:													
Red blood cells	2.96	3.32	4.20	4.41	4.44	4.71	....	4.78	4.74	5.01	....	....	....
Hemoglobin...	56	63	82	85	85	89	..	85	94	88	..	..	..
Iron.....	26.3	27.5	35.3	36.1	35.9	34.5	....	38.5	36.4	38.6	....	....	....
Case 12:													
Red blood cells	3.56	3.69	3.77	4.06	4.06	4.67	4.14	....	....	....	4.74	....	....
Hemoglobin...	71	73	76	83	85	86	90	..	..	..	93	..	..
Iron.....	28.5	30.3	32.3	39.9	34.5	37.0	35.3	....	....	....	41.4	....	....

RESULTS

The results obtained by each method of treatment are tabulated separately. A typical case in each group is presented in graphic form in the accompanying charts.

The patients who received liver extract alone showed no appreciable change in the percentage of hemoglobin or the blood iron. In a few instances the erythrocyte count improved slightly. After the addition of iron, however, all three factors increased in a very satisfactory manner (table 3). When the liver extract was supplemented by small amounts of whole liver, improvement was apparent but less striking than when iron was

6. Osgood, E. E., and Haskins, H. D.: A New Permanent Standard for Estimation of Hemoglobin by the Acid Hematin Method, J. Biol. Chem. 57: 107 (Aug.) 1923.

TABLE 3.—*Observations on Six Patients to Whom Liver Extract Plus Iron were Given* *

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 13:													
Red blood cells	4.88	4.27	4.77	4.97	4.89	4.54	4.99	....	....	....	....	....	....
Hemoglobin...	43	40	44	42	47	43	44	..	..	..	..	..	..
Iron.....	21.6	21.7	25.1	22.2	21.3	19.2	20.2	....	....	....	....	....	....
Red blood cells	4.99	4.90	5.19	4.87	....	....	5.24	....	....	....	....	5.50	....
Hemoglobin...	44	47	66	78	..	..	94	..	..	..	..	87	..
Iron.....	20.2	28.2	29.8	41.7	....	....	43.5	....	....	....	....	41.6	....
Case 14:													
Red blood cells	3.70	4.40	3.84	4.25	....	....	....	....	....	....	....	....	....
Hemoglobin...	38	36	37	50	..	..	..	..	..	..	..	..	..
Iron.....	21.2	22.7	21.3	23.6	....	....	....	....	....	....	....	....	....
Red blood cells	4.25	4.11	4.70	4.80	4.04	4.49	4.80	....	....	....	....	4.50	....
Hemoglobin...	50	57	74	70	65	74	76	..	..	..	..	74	..
Iron.....	23.6	29.9	37.0	35.7	31.9	40.3	41.1	....	....	....	....	44.4	....
Case 15:													
Red blood cells	3.30	3.30	3.30	3.42	....	....	....	....	....	....	....	....	....
Hemoglobin...	53	45	47	44	..	..	..	..	..	..	..	..	..
Iron.....	26.2	24.3	26.3	25.9	....	....	....	....	....	....	....	....	....
Red blood cells	3.42	....	3.82	4.20	4.67	....	5.07	5.12	....	....	....	5.34	....
Hemoglobin...	44	..	48	62	60	..	72	64	..	..	..	81	..
Iron.....	25.9	....	25.3	36.5	35.4	....	41.0	37.4	....	....	....	39.9	....
Case 16:													
Red blood cells	3.00	3.25	....	....	3.70	3.89	4.00	....	....	....	....	....	....
Hemoglobin...	55	65	..	..	60	60	62	..	..	..	..	..	..
Iron.....	32.0	31.3	....	....	27.1	32.0	31.4	....	....	....	....	....	....
Red blood cells	4.00	4.00	....	4.30	5.19	4.93	....	....	....	4.97	....	....	....
Hemoglobin...	62	64	..	77	79	84	..	..	..	85	..	..	..
Iron.....	31.4	31.6	....	36.9	39.6	45.7	....	....	....	39.3	....	....	....
Case 17:													
Red blood cells	2.38	2.71	3.09	3.19	3.48	3.48	....	....	....	....	....	....	....
Hemoglobin...	41	41	42	42	47	50	..	..	..	..	..	..	..
Iron.....	19.9	16.8	16.7	23.6	24.6	24.2	....	....	....	....	....	....	....
Red blood cells	3.48	....	....	4.75	....	....	....	4.93	4.98	....	....	....	....
Hemoglobin...	50	..	..	60	..	..	..	82	82	..	..	..	..
Iron.....	24.2	....	....	27.3	....	....	....	34.8	35.1	....	....	....	....
Case 18: †													
Red blood cells	4.88	4.65	4.80	4.76	4.90	....	4.46	4.73	....	....	....	....	....
Hemoglobin...	56	56	61	64	77	..	74	80	..	..	..	..	..
Iron.....	24.9	27.5	28.3	30.9	30.9	....	41.1	41.9	....	....	....	....	....

* The first group of figures in each case represents the control period on liver extract alone. The second group indicates the improvement that occurred after the administration of iron in addition to the extract.

† Figures denote improvement.

TABLE 4.—*Individual Observations on Six Patients to Whom Liver Extract and Whole Liver were Administered* *

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 19:													
Red blood cells	3.00	3.00	3.25	3.35	....	3.30	....	....	....	....	....	....	....
Hemoglobin...	45	47	45	47	..	42	..	..	..	..	..	..	..
Iron.....	21.1	20.7	22.8	27.2	...	21.4	....	....	....	....	....	....	....
Red blood cells	3.30	3.43	4.40	4.09	4.83	4.60	4.50	4.88	4.80	....	....	....	4.88
Hemoglobin...	42	39	48	48	55	62	69	65	79	..	..	..	83
Iron.....	21.4	23.4	25.9	30.5	32.6	33.6	29.4	39.1	38.6	....	....	....	37.5
Case 20:													
Red blood cells	2.38	3.21	3.94	3.69	....	....	....	....	....	....	....	....	....
Hemoglobin...	39	46	52	54	..	..	..	..	..	..	..	..	..
Iron.....	23.0	23.6	23.1	28.0	....	....	....	....	....	....	....	....	....
Red blood cells	3.69	4.11	3.80	4.64	4.30	4.66	....	....	....	4.86	4.96	5.31	4.49
Hemoglobin...	54	65	62	62	69	68	..	..	..	73	75	78	79
Iron.....	28.0	28.7	27.8	28.1	27.5	30.0	....	....	....	31.9	35.1	38.7	37.2
Case 21:													
Red blood cells	3.40	....	....	....	3.88	3.98	....	....	....	....	....	....	....
Hemoglobin...	57	..	..	..	73	73	..	..	..	..	..	..	..
Iron.....	36.0	....	....	....	33.3	36.1	....	....	....	....	....	....	....
Red blood cells	3.98	4.42	4.34	4.20	4.34	4.45	4.60	....	....	....	....	4.23	....
Hemoglobin...	73	78	82	77	81	78	81	..	..	..	..	87	..
Iron.....	36.1	35.8	37.5	37.3	40.0	41.9	39.7	....	....	....	....	38.4	....
Case 22:													
Red blood cells	3.26	4.31	4.46	4.29	4.12	....	....	....	....	....	....	....	....
Hemoglobin...	48	46	47	44	41	..	..	..	..	..	..	..	..
Iron.....	21.0	21.3	21.1	21.8	21.9	....	....	....	....	....	....	....	....
Red blood cells	4.12	3.84	3.88	4.30	4.55	4.62	4.63	4.71	5.09	5.16	5.18	5.15	5.30
Hemoglobin...	41	43	48	52	53	51	59	55	48	64	68	62	91
Iron.....	21.9	18.2	20.0	19.2	21.7	22.2	22.5	22.9	21.9	24.0	32.9	38.2	41.1
Case 23:													
Red blood cells	3.13	3.67	4.02	4.21	4.44	....	....	....	....	....	....	....	....
Hemoglobin...	69	79	85	88	87	..	..	..	..	..	..	..	..
Iron.....	36.1	34.5	38.7	33.3	37.8	....	....	....	....	....	....	....	....
Red blood cells	4.44	4.26	4.42	4.59	4.78	4.31	4.53	....	5.16	....	....	4.76	....
Hemoglobin...	87	84	91	85	84	87	91	..	89	..	..	97	..
Iron.....	37.8	34.1	37.0	35.7	32.6	38.4	39.2	....	40.5	....	....	45.9	....
Case 24:													
Red blood cells	4.08	4.15	4.34	4.57	4.33	....	....	....	....	....	....	....	....
Hemoglobin...	51	48	38	45	48	..	..	..	..	..	..	..	..
Iron.....	19.5	19.8	18.7	18.3	19.4	....	....	....	....	....	....	....	....
Red blood cells	4.33	4.21	4.76	4.46	....	4.59	4.42	4.56	4.14	....	....	....	....
Hemoglobin...	48	49	48	49	..	48	49	48	55	..	..	..	..
Iron.....	19.4	19.7	19.9	20.5	....	21.6	20.6	21.1	24.0	....	....	....	....

* The first group of figures in each case represents the control period on liver extract alone. The second group demonstrates the effect of the addition of whole liver.

used in conjunction with the extract (table 4). In tables 3 and 4 the first group of figures in each case represents the changes in the blood that occurred in the interval during which liver extract alone was administered. The second group records the improvement that followed the addition of either ferrous carbonate or whole liver. The effect of iron or of liver was not increased by the simultaneous administration of liver extract.

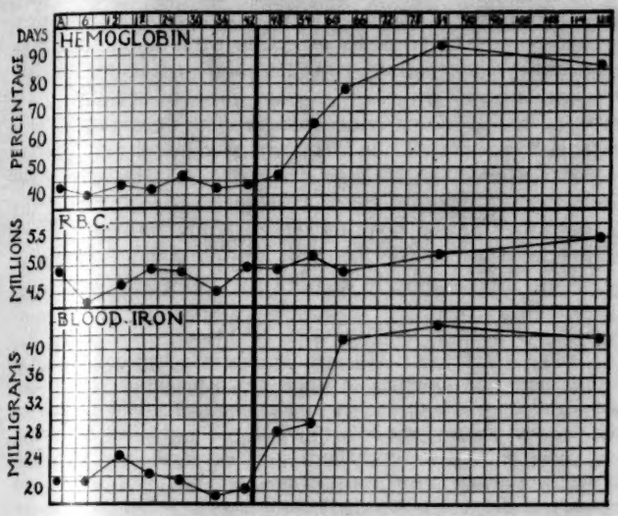

Chart 3 (case 13, table 3).—This patient was treated with liver extract and iron. The single vertical line at the left indicates the beginning of treatment with liver extract. Marked improvement is apparent after the administration of iron (indicated by the double vertical line).

Although the observations on the percentage of hemoglobin and the red blood cell counts are of considerable interest, the figures for blood iron offer a much more accurate criterion for evaluating the results than do either of the other two factors. When the iron content of the blood failed to increase from week to week under appropriate treatment, and in some instances

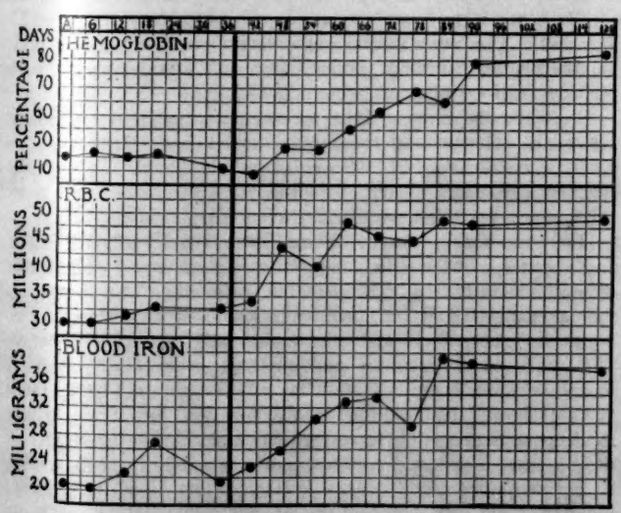

Chart 4 (case 19, table 4).—This patient was treated with liver extract and whole liver. The single vertical line at the left indicates the beginning of treatment with liver extract. The addition of liver is indicated by the double vertical line.

actually decreased, the cause was usually apparent in the fact that the patient had had a recent menstrual period. In other words, this determination is sufficiently sensitive to detect even the slight temporary anemia that occurs during the normal menstrual cycle. That such variations in the blood iron actually do occur under these circumstances is apparent from the foregoing observations.

CONCLUSION

Patients with secondary anemia due to chronic hemorrhage or chronic chlorosis respond very favorably to treatment with iron in the form of ferrous carbonate. They respond equally well when whole liver is given in conjunction with iron.

Liver extract is of no value in the treatment of these types of chronic secondary anemia. The effect of iron or of whole liver is not increased by the simultaneous administration of liver extract.

311 Beacon Street.

AGRANULOCYTOSIS

REPORT OF A CASE WITH A TERMINAL GAS BACILLUS INFECTION *

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During the eight years since Werner Schultz of Berlin first gave the name "agranulocytosis" or "agranulocytic angina" to a group of cases that have a severe ulcerative and gangrenous stomatitis and a neutrophil leukopenia with a relative lymphocytosis, many cases have been reported, chiefly by German and American observers. The literature dealing with this peculiar phenomenon has been repeatedly and comprehensively reviewed to date. Many clinicians regard agranulocytosis as a hitherto undescribed disease entity, but numerous writers maintain that the picture described by Schultz is not specific and hold to the view that so-called agranulocytosis simply constitutes a type of leukopenic reaction to an overwhelming infection. Whatever the view, there are features in the reported cases sufficiently striking, uniform and frequent to warrant separate group consideration.

Cases are common to the two sexes with an incidence of about 70 per cent in females, and they occur in all age groups, the average age being about 40 years. The majority of cases have an acute onset in a period of good health. There is a high continued fever, from 102 to 104 F., and profound prostration is common. Other prominent symptoms are sore throat, malaise, chills and dysphagia. Necrotic or ulcerative processes have been observed almost constantly in various parts of the oral cavity, and not infrequently lower in the gastro-intestinal tract, in the cervix and the vagina, and on the cutaneous surfaces. Occasionally the spleen and liver are enlarged. In about one half of the cases, jaundice develops as the disease progresses. Examination of the heart and lungs is negative in the beginning, but death is often preceded by a terminal pneumonia. A terminal gas bacillus infection, such as occurred in the case here reported, appears to be entirely unique. However, Talley and Griffith [1] record a case in which a clinical diagnosis of gas bacillus infection was made and *B. welchii* serum given on account of a rapid swelling of the hand and arm with bluish discoloration and formation of vesicles. The infection apparently started from a cut in the palm of the hand received before admission. Smears and blood cultures failed to

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1. Talley, J. E., and Griffith, G. C.: A Discussion of Six Cases of Agranulocytosis, M. Clin. North America **13**: 1079-1090 (Jan.) 1930.

confirm the diagnosis. Trace [2] also mentions a case in which gas bacillus infection of the arm was suspected but not proved. The course of the disease is usually acute and death occurs in from four to eight days, the extremes being from two to forty-two days. Periods of temporary improvement sometimes take place, but death may be expected to ensue in approximately 90 per cent of the cases.

The outstanding pathognomonic characteristic of this highly fatal disorder is the unusually striking blood picture. A leukopenia at the onset of the disease is the rule, the total leukocytes often being reduced to 1,200 or less per cubic millimeter. Polymorphonuclear leukocytes either are entirely absent or constitute less than 6 per cent of the white cells. The lymphocytes are always relatively increased, sometimes up to 100 per cent. An important feature of the blood examination is the maintenance of a normal red cell count and hemoglobin percentage. A few cases develop a mild secondary anemia late in the disease. The platelet count also is usually within normal limits and the bleeding and coagulation time is normal. Blood cultures are generally sterile, and in the few cases with positive blood culture (about 10 per cent) there is no uniformity of invading organism.

In this disease the bone marrow as well as the blood picture is characteristic. It is usually pinkish or red. Lymphoid cells are present mainly, and erythroblasts and megakaryocytes are normal. Granulocytic elements are almost completely absent. Cell-poor marrow is a fairly consistent finding at autopsy, but the hypoplasia of granular cells has also been found in bone marrow during the height of the disease and is therefore not a terminal event.

The etiologic agent has as yet not been determined. Whether the condition is the result of endocrine disturbance, whether it belongs in the groups of the acute leukemias or whether it is an infectious disease that especially affects the granulocytic system remains a matter of wide conjecture. A variety of organisms has been recovered from the blood stream and local lesions, but in many instances pathogenic organisms have not been found. From the blood, hemolytic streptococci, staphylococci, *Bacillus pyocyaneus, B. coli,* pneumococci and *Streptococcus viridans* (Cannon) have been recovered. From oral lesions, Klebs-Loeffler bacilli, Vincent's spirochetes and fusiform bacilli, pneumococci, *B. pyocyaneus* and streptococci of various types have been isolated. However, no definite causative factor has been determined, as the bacteriology is without uniformity, and the lack of demonstrable blood stream infection becomes a significant negative finding. The disease not infrequently follows the extraction of teeth, and a few cases have followed antisyphilitic treatment with the arsphenamines.

In the differential diagnosis of agranulocytosis, acute poisoning, such as from arsenic, benzene, thorium and roentgen rays, acute leukemia and aleukemic leukemia, unusual cases of anemia, and sepsis may all produce similar anatomic and blood changes. In its early stages the disease often parades under the guise of diphtheria, Vincent's angina or so-called spetic or streptococcic sore throat.

Therapy is of necessity largely symptomatic, since the etiology remains obscure. Local treatment is directed toward alleviation of sore throat and pain by frequent gargling and various antiseptic applications. General treatment includes the usual supportive care and an attempt to maintain nutrition. There is no specific therapy, but frequent blood transfusions, intravenous administration of neoarsphenamine, and stimulating doses of x-rays are used in an attempt to stimulate the bone marrow.

In the foregoing paragraphs the salient features of this highly fatal malady are briefly mentioned. Whether agranulocytosis represents a particular biologic type of hematopoietic reaction to infection or is a distinct disease entity, it certainly robs the body of its defensive mechanism and leaves it an easy prey to severe infection, as the accompanying case report illustrates. The case here presented conforms in its clinical and pathologic features with the majority of the reported instances of agranulocytosis from its initial onset up to the onset of the terminal gas bacillus infection fourteen hours before the death of the patient. From that point on, it is seemingly without parallel in the literature.

REPORT OF CASE

History.—Mrs. H. J. H., aged 26, married, had been in good health until the morning of June 29, 1930, when she awoke complaining of sore throat, general aching and soreness. During the day her temperature rose to 101 F. For the next two days her symptoms were unchanged. The fourth day she felt better, her temperature was normal, and she was able to be up part of the time although she still complained of sore throat. The next day her temperature was 103 F., her throat was more painful, and she was greatly prostrated. From this time on, her condition grew progressively worse. When she was brought to the hospital on the seventh day, her temperature was 104 and her pulse was 130. The lungs were apparently normal. The abdomen was moderately distended, and the spleen and liver were not palpable. There was no jaundice. In addition to the sore throat she now had discrete superficial ulcers on the hard palate and around the gum margins. Smears from these showed the presence of Vincent's spirilla and spirochetes. The blood count was as follows: hemoglobin, 73 per cent; red blood cells, 4,200,000; white blood cells, 2,975; polymorphonuclear neutrophils, 8 per cent; small lymphocytes, 88 per cent; large lymphocytes, 3 per cent; metamyelocytes, 1 per cent. The next morning the leukocytes were 1,450, with polymorphonuclear neutrophils 4 per cent and lymphocytes 96 per cent. Blood platelets were 130,000.

She was now given a light roentgen treatment over the long bones, the sternum and the jaws. A few hours later she was given a transfusion of 500 cc. of whole blood, without any reaction resulting. Just before the transfusion she was given 0.3 Gm. of neoarsphenamine intravenously.

Her temperature ranged from 104 to 105 F. all that night, and about 5 a. m. she began to complain of severe pain in the upper part of the right thigh. The pain was of such severity that a grain (0.065 Gm.) of pantopium hydrochloricum in two hours had no effect, and she was finally given 1/100 grain (0.6 mg.) of scopolamine and one-half grain (0.03 Gm.) of morphine before she was quieted. Examination of the thigh at first showed no swelling or discoloration, but it was tender to deep pressure. There was no change in the condition of the mouth. The blood count was now as follows: hemoglobin, 85 per cent; red blood cells, 4,380,000; white blood cells, 1,850; polymorphonuclear neutrophils, 35 per cent; lymphocytes, 65 per cent. Another blood transfusion was now decided on but was not given for, on intertyping the blood with that of nine prospective donors, a most unusual phenomenon was observed. The patient's cells were rapidly and completely hemolized by the serum of each and every donor tried, while the donor's cells were not affected by the patient's serum.

About eight hours after the onset of the pain in the hip an area of bluish discoloration about 4 by 8 inches appeared on the outer aspect of the thigh just above the knee. In a little while a similar area, though smaller, appeared on the calf. With the appearance of these discolorations the thigh began

2. Trace, I. M.: Agranulocytic Angina, Illinois M. J. 55: 36-38 (Jan.) 1929.

to swell, and in a short time the entire leg was greatly swollen and had become cold and stiff. No pulsations could be felt below the femoral artery. Soon after the swelling appeared, definite crepitation could be made out on deep pressure over the discolored areas. A roentgenogram of the thigh showed no bony changes, but the soft tissues showed air infiltration both deep and superficial. At the time of the patient's death, fourteen hours after the onset of the pain, the crepitation and discoloration had extended upward to the level of Poupart's ligament, the crest of the ilium and the upper margin of the right gluteal muscles posteriorly. In the meantime, large purplish blebs had appeared on the posterior aspect of this thigh.

Autopsy.—The autopsy was done about two hours after death. The essential observations were as follows: There were dirty grayish ulcers around the gum margins of the right lower molar teeth, on the hard palate and on the tonsil pillars. The lungs were normal, except for a small area of pneumonic consolidation in the right lower lobe. The heart was normal except that a considerable amount of gas escaped when the right auricle was punctured to obtain blood for culture. The blood obtained was frothy. The intestines were moderately distended but there was no evidence of peritonitis. In the lower end of the ileum about 3 inches from the ileocecal valve there was a dry grayish, somewhat elevated and necrotic-looking Peyer's patch about 1 inch in diameter. The serosa covering it was quite red, but no evidence of perforation could be found. The adjacent mesenteric glands were not enlarged. On the anterior wall of the ampulla of the rectum there were two superficial grayish ulcers about 1 cm. in diameter. The serosa covering these was also greatly injected, but again no evidence of a perforation could be demonstrated. Directly opposite these ulcers on the adjacent posterior wall of the uterus was a similar circumscribed area of redness. The right tube and ovary were enlarged and crepitant. The left adnexa were normal. The uterus was normal in size and appearance and the endometrium was normal. No ulcerations were found in the vagina, and the cervix was smooth and normal. The liver was normal in size and appearance. The spleen was about twice normal size, was soft, and the cut surface was such as is usually seen in the presence of an acute infection. A specimen of bone marrow from the right femur was pale red in appearance and smears showed a remarkable scarcity of cells. No polymorphonuclear cells of any kind were seen and only an occasional myeloblast.

The most remarkable changes were found in the right leg, which was greatly swollen and which had apparently increased in size after death. The outer aspect of the thigh extending to the crest of the ilium had a mottled bluish appearance. On the posterior surface were two large blebs, each about 3 inches in diameter, and both surrounded by large irregular areas of ecchymosis. These blebs contained a clear wine-colored fluid. When the leg was punctured there was an audible escape of gas, which readily ignited. A careful search was made for a portal of entry for the gas bacillus, but the skin was intact everywhere. The muscles had the peculiar dark bruised appearance usually seen in cases of gas gangrene. Cultures were made from the throat, the heart blood, the blebs on the thigh, and the muscles of the thigh, all of which showed the presence of the gas bacillus in large numbers.

COMMENT

This case is unique, first, because of the terminal gas bacillus infection and, secondly, because the portal of entry for the gas infection was never determined. There was certainly no reason to believe that the gas bacillus entered through the skin. Since this organism is commonly found in the intestinal tract, a careful search was made for a portal of entry here. Assuming that it entered through the intestinal ulcers, this would not explain why the gas infection was practically limited to the right leg. The absence of vaginal ulcers and of any cervical or uterine lesion is sufficient to exclude the genital tract as the primary source.

20 South Dunlap Street.

THE CHEST IN RACHITIC CHILDREN

A ROENTGENOLOGIC STUDY *

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During the past five years all cases coming to the roentgen laboratory of the Children's Hospital for examination of the chest that showed signs of rickets, such as a rosary or a deformity of the chest, have been collected for study. Information on the incidence of pneumonia and atelectasis, the type of pneumonia usually encountered, the prognosis and the differential diagnosis of pneumonia and atelectasis was especially sought. In cases of suspected pneumonia in infants and young children showing a rachitic rosary with deformity of the chest, the differentiation between atelectasis and pneumonia is sometimes difficult. An effort was made to study the usual roentgenographic distribution of atelectasis and to reach some conclusion that would be an aid in the differential diagnosis.

Seventy-eight patients were studied, divided into three groups: the first, thirty-one in number, which showed a rosary in the roentgenogram but which exhibited at no time any evidence of pneumonia or a chest deformity; the second, twenty-four cases which showed a rosary in the roentgenogram and presented roentgenographic and clinical evidence of pneumonia but with little or no chest deformity, and the third group, twenty-three cases, with marked chest deformity with or without pneumonia. In the first group there were twenty-four Negro and seven white children, three of the latter being Italians; in the second, there were twenty-one Negroes and three Italians; in the third, consisting of twenty-three children, all were Negroes.

In the first group, ranging from 5 months to 4 years of age, a large proportion were admitted to the hospital with a diagnosis of acute bronchitis and showed no evidence in the roentgenograms of any pneumonic process. Two deaths occurred in this group, one from intussusception and the other from an unknown cause, it being impossible to obtain an autopsy. In several cases, although no definite depression of the chest was present, there were shadows running parallel to the heart and mediastinal shadows, which were suggestive of the so-called atelectatic strips later to be described. No deaths were directly or indirectly attributable to rickets and the study of this group bears out the statements of Hess,[1] Park and Howland [2] and others that rickets with lesser chest changes is not dangerous to life.

In the second group, those cases showing a rosary with little or no chest deformity, the ages of the children ranged from 5 to 26 months. No cases were included in this group in which there was a definite recorded note of well marked chest deformity. Of the twenty-four patients, five died, a mortality of 20.8 per cent. Fourteen showed roentgen evidence of bronchopneumonia and ten showed lobar pneumonia. Of the lobar pneumonia patients, two had a complicating

* From the Roentgen Laboratory of the Children's Hospital.
* Read before the Section on Radiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.

1. Hess, A. F.: Rickets Including Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929.

2. Park, E. A., and Howland, J.: The Dangers to Life of Severe Involvement of the Thorax in Rickets, Bull. Johns Hopkins Hosp. 32: 101-109 (April) 1921.

empyema. The cause of four deaths was bronchopneumonia and the fifth was caused by lobar pneumonia followed by empyema.

The last group included patients showing marked deformity either clinically or in the roentgenograms. Several, with very little actual deformity apparent in the roentgenograms, presented a markedly streaked or moth-eaten appearance of the ribs with clinical notes of dyspnea, respiratory difficulty or apparently deficient aeration of the lungs. Of the twenty-three patients in this group, all of whom were Negroes, twelve died, a mortality of 52.1 per cent. Thirteen had clinical and roentgen evidence of bronchopneumonia and three had lobar pneumonia. Of the patients with bronchopneumonia, nine died; of those having lobar pneumonia, two died. The ages ranged from 5 to 15 months except in one case of lobar pneumonia, which occurred in a child of 4 years who had rickets in an advanced stage of healing, with a persistent chest deformity. The remaining death was apparently caused, as stated in the clinical record, by deficient aeration of the lungs, depression of the chest wall and extreme abdominal distention. An autopsy was obtained in this case.

When the chest was opened at autopsy, it was found to be very narrow and constricted in its anterior portion. This narrow anterior part was occupied almost entirely by the heart, which lay in a central position. At about the middle of the ribs was a forward angulation, the angle being so acute that practically no space was left in the pleural cavity. About two thirds of the left lung was dark, bluish and of rubbery consistency, due to atelectasis. The surrounding edges, anterior and posterior, were emphysematous. The edges were sharply demarcated from the emphysematous portions. The atelectatic areas corresponded with the depressions formed by the bent-in chest wall at the site of the rosary. The entire middle lobe of the right lung was atelectatic. No mention was made in the autopsy record of the presence of any areas of bronchopneumonia.

THE RACHITIC CHEST

The deformities of the thorax produced by rickets have been fully described by Hess, Park and Howland and others. The earliest change noted in the roentgenogram is the beading of the ribs or the rosary, which is shown by the saucer-shaped margins of the sternal extremities. This sign cannot always be used as evidence of early rickets. Hess has pointed out that the rosary is not apparent in the roentgenogram until rickets is often well advanced. Again, the rosary is not always caused by rickets alone. Hess and Unger [3] have shown that it can be caused by infantile scurvy, but in the latter it is angular rather than round and knobby as in rickets and is due to actual infractions at the costochondral junctions. The beading in rickets is usually manifested in the roentgenogram by more or less prominent cupping, causing the saucer depression of the anterior chondral extremities of the ribs. These shadows must not be mistaken for infiltration and abnormal densities in the lungs themselves.

In mild cases this is the only noticeable change. In the severe cases, before healing has begun, the ribs have a moth-eaten, streaked appearance, the cortex is much rarefied, and it casts only a faint shadow in the roentgenogram. It seems quite probable that this extreme rarefaction is the cause of the pliability and yielding of the chest wall, which can be demonstrated when pressure is exerted on it during clinical examination. In my series of cases it was difficult to prove this, as the presence or absence of pliability of the chest wall was not a routine observation on all of the clinical records.

The chest may be misshapen in several different ways. In the majority of cases there was no deformity of the chest wall, merely an uncomplicated rosary being present. In a few patients, in addition to the rosary, the ribs were curved inward at the level of the seventh or eighth ribs. This was usually bilateral. In other cases, the upper half of the thorax had an appearance as though compressed while the lowermost ribs flared out, the anterior portions being affected, and their parallel arrangement was lost. The interspaces became progressively wider as the lower ribs were reached. In other patients the chest remained narrow throughout its length. Pathologic fractures of the ribs were frequently found, the displacement of the fragments producing an irregularly indented appearance of the thoracic cage.

In very severe cases the chest may be so deformed that pressure is exerted on the lungs and the thoracic blood vessels, leading to disturbances in respiration and circulation. Park and Howland [2] have described such deformities occurring in Negro babies, a condition which constitutes a grave menace to life. They studied twenty-two children between the ages of 8 months and 4½ years. All the children of their series exhibited well marked deformities of the thorax. In addition there was present what is considered by the authors the essentially dangerous element, great weakening of the chest wall.

They describe the shape of the chest wall as similar to a blunt wedge, the sternum and the adjacent portions of the costal cartilages corresponding to the narrow end of the wedge. Deep bilateral hollows in the chest wall correspond to the sites of the costochondral junctions. The deepest part of the depression lies at the sixth or seventh costochondral junctions. The depression on the right side is in most cases larger than the one on the left, which they think is caused by the fact that the heart furnishes support to the thoracic wall on the left side. In the less severe cases there may be no depression on the left side but only flattening of the normal arch of the chest. The posterior angles of the ribs that form the depression are much more bent than normal and form a rounded ridgelike elevation 3 or 4 cm. broad, which projects laterally and sharply separates the back from the anterolateral surface of the chest.

This deformity, however, is not believed by them to be the essentially dangerous condition. The weakness of the chest wall is the real menace to life. They point out that the diaphragm can act only to advantage when its points of attachment are fixed and remain firm. In the weakened thorax of rickets, the diaphragm expends part of its energy in drawing its own points of attachment inward. In so doing it diminishes the extent of its descent and impairs, by just so much, its powers to increase thoracic space. Owing to the deformity of the thorax, the diaphragm must tend to remain, even in expiration, in a state of partial inspiratory contraction. When inspiration takes place it must commence its contraction from a position of partial contraction and is able, therefore, to accomplish only part of its work, which, as a muscle in a state of normal relaxation at the outset, it would be capable of accomplishing. It is quite possible, they also believe, that the contractile power of the diaphragm is impaired as a result of the rickets itself.

3. Hess, A. F., and Unger, L. J.: Scorbutic Beading of the Ribs, Am. J. Dis. Child. **19**: 331 (May) 1920, quoted by Hess (footnote 1).

As a result of this impairment of the function of the diaphragm due to the weak chest wall, Park and Howland believe that a definite clinical picture results. The temperature of the patients with this condition is not greatly elevated and sometimes remains normal; the respirations are greatly increased, never less than 60

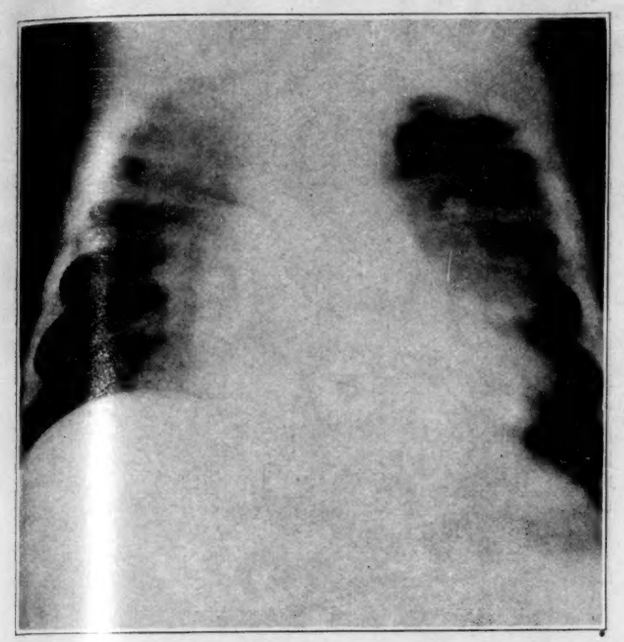

Fig. 1 (group 2).—Extensive bilateral bronchopneumonia occurring in a patient having only a mild rosary with no marked rachitic involvement of the ribs.

and sometimes rising to 80 and 100 a minute. The leukocyte count is low. The presence of infection is entirely subsidiary; the loss of rigidity of the thoracic frame, the result of the rickets, is the dangerous element. The autopsy record just quoted is an excellent illustration of this type of case.

ROENTGEN APPEARANCE OF THE RACHITIC CHEST

In the first group of cases the rosary was shown in the roentgenogram in the usual manner, the width of the cup-shaped sternal ends of the ribs depending on the degree of rachitic involvement. In three of the cases there were indistinct striplike shadows of increased density running upward and downward from each hilus. Since obvious deformity of the chest was not present, these shadows could not be regarded with certainty as the usual manifestations of atelectasis. As healing progresses, the cup-shaped ends become denser and more clearly defined.

In the second group of cases, in which bronchopneumonia was present in fourteen and lobar pneumonia in ten, the usual roentgenographic changes of each type were found. In four cases of lobar pneumonia involving the right upper lobe, definite retraction of the heart to the affected side occurred. This displacement of the heart was regarded as an illustration of pneumonia combined with atelectasis, as described by Griffith,[4] Thoenes [5] and others, and occurs in normal children who contract pneumonia. None of the cases of this group showed changes that could be regarded as characteristic of the atelectasis due to rickets.

4. Griffith, J. P. C.: Displacement of the Heart in Pneumonia in Children, Am. J. M. Sc. **174**: 448-452 (Oct.) 1927.
5. Thoenes: Monatschr. f. Kinderh. **23**: 353 (July) 1922, quoted by Griffith, ref. 4.

In the roentgen picture of the third group of my cases, the ribs were thin and often had the streaked and rarefied appearance previously referred to which indicates weakness of the chest wall. Pathologic fractures frequently caused indentations of the thoracic wall. Scoliosis and kyphosis often increased the deformity of the chest. Of the twenty-three patients of this group, seven definitely showed the central position of the heart such as occurred in the case just quoted in which a postmortem examination was made. Often the heart seemed proportionately larger than the chest. Parallel with the sternum, usually running from the second or third dorsal vertebra, were striplike shadows of increased density in each lung which were caused by atelectasis. These shadows in some cases coincided with those of the rosary; in others the rosary seemed to lie at the outer side of the atelectatic areas. Faulty technic, deviation of the target from the midline of the chest, or rotation of the child on the film can cause such a shift in the positions of the rosary and the atelectatic areas. In many cases the shadow of the atelectatic strip was merged on the left side with the shadow of the heart and so was lost to view.

Scattered throughout the lungs beyond the atelectatic strips were small, more or less circumscribed areas of increased density which were due either to small areas of atelectasis or to small areas of bronchopneumonia. It is practically impossible from a roentgen standpoint to differentiate between these two conditions. Many of the cases of bronchopneumonia showed large dense areas due to confluence of numerous lobular areas of involvement. When a child has a history of tuberculous contacts, has a positive tuberculin reaction and has other signs of tuberculosis, it is very difficult to differentiate between bronchopneumonia or atelectasis

Fig. 2 (group 3).—Marked rosary; moderate rachitic involvement of the ribs. Extensive bronchopneumonia and atelectatic strip, right lung. Marked deformity of the chest, especially on the right side, shown on clinical examination.

and tuberculosis. One patient of the third group had, in addition to very marked signs of rickets, shown both on clinical examination and in the roentgenogram, a positive tuberculin reaction and also a definite history of contact with tuberculous relatives.

The usual roentgen signs of atelectasis cannot be relied on in cases of rachitic deformity. The heart can be apparently retracted to the right side, as is the case in the typical roentgenogram of atelectasis occurring in the right lung, but this is usually caused in the rachitic chest by the central position which the heart assumes because of the deformity of the thoracic wall. The small scattered areas of atelectasis may be uniformly distributed throughout both lungs and so cause no deviation of the heart to either side.

As Park and Howland have stated, the right side of the chest often showed in my series more deformity than the left. It is difficult to gage accurately the amount of deformity of the chest when only a rosary can be seen in the roentgenogram and no constriction of the upper chest wall, pathologic fractures or flaring of the lower ribs are present. This is true in roentgenograms in either the anteroposterior or lateral planes. Lateral views are useful in determining whether depression or bulging of the sternum is present. It is more common to find sternal deformities in the late stage of complete healing and they often may remain as residual deformities throughout life.

The change in the appearance of the rachitic chest after healing has begun is striking. This has been observed in cases in which cod liver oil has been given, and especially, in my series of cases, in those children who receive ultraviolet ray therapy. The ribs and bones of the shoulder girdle lose their streaked appearance, the upper extremity of the humerus and the scapula show new zones of temporary calcification with well defined osteoid zones, the swollen sternal ends

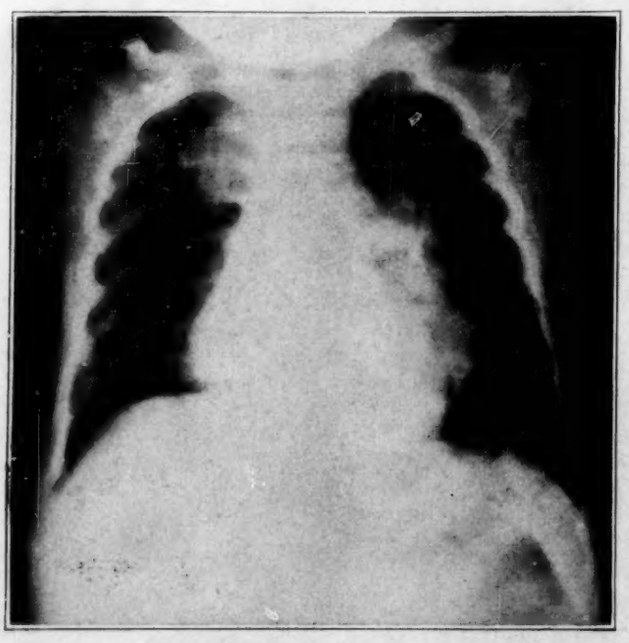

Fig. 3 (group 3).—Marked rosary and chest deformity; small area of bronchopneumonia, upper right lung; partial atelectatic strip, left lung.

of the ribs cast denser and wider shadows, and even if the deformity remains, the bones give an impression of greater strength. With this return of rigidity of the chest wall, the danger from respiratory infection is appreciably lessened.

CONCLUSIONS

The study of this series of cases shows conclusively that mild rachitic involvement of the chest, as has been stated by previous authors, is not dangerous to life and does not increase the hazard when pulmonary infections occur. None of the patients in the first group, who had a mild or moderate rosary without apparent chest deformity, died from the effect of the rachitic process. Many were examined for a suspected pneumonia, but the roentgen examination proved negative and they were subsequently discharged from the hospital with a diagnosis of acute bronchitis. The mortality rate of

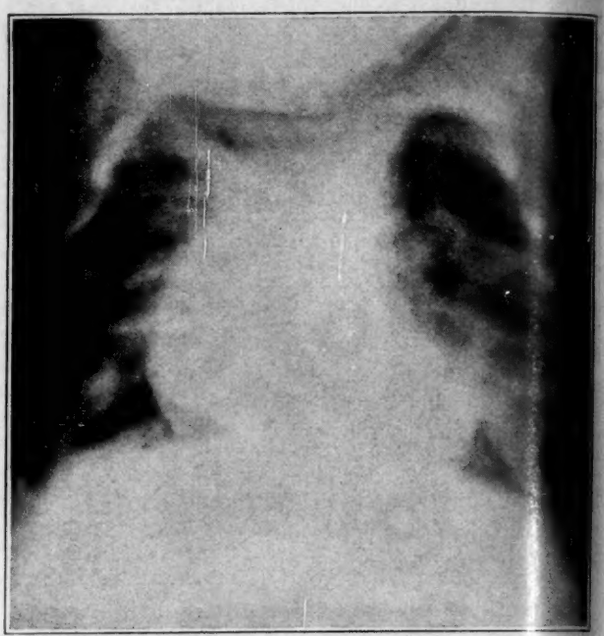

Fig. 4 (group 3).—Marked rosary and chest deformity. Autopsy showed central position of the heart, areas of atelectasis, left lung, corresponding to the depression of the rosary. Atelectasis, middle lobe of the right lung. Scoliosis and kyphosis.

the second group, which consisted of cases exhibiting a mild or moderate rosary with no deformity, does not seem to be greater than the usual rate found in the average patients admitted to hospitals with pneumonia showing no rachitic involvement of the chest, many of whom often have had prolonged treatment at home until they have reached a grave stage of their illness. The rate rises proportionately with the increase in deformity and especially with the degree of pliability of the chest wall. The case that came to autopsy in my series would seem to prove their statement that deformity and normal thoracic function are compatible, but the loss of rigidity of the chest will so seriously impair the normal function that any infection may prove fatal, however mild it may be. As healing progresses, the thorax regains its rigidity even though deformed and the death rate in this series was consequently much less in the children over 3 years of age. In fact, no patients died in the series when pneumonia occurred after healing was well advanced. Rickets is of course well known to be especially prevalent in the Negro race, and almost the entire series was composed of Negroes. The third, or severe, group consisted entirely of Negroes.

The usual type of atelectasis due to rickets as described by Baetjer and Waters,[6] Park and Howland[2] and others can easily be recognized in the roentgenogram by its characteristic location. The small scattered areas of atelectasis are indistinguishable from bronchopneumonia. The usual signs of atelectasis, as they

6. Baetjer, F. H., and Waters, C. A.: Injuries and Diseases of the Bones and Joints, New York, Paul B. Hoeber, 1921.

occur when the normal chest becomes involved, are of no assistance in the diagnosis of rachitic atelectasis, because the latter is for the most part dependent on the degree of rachitic involvement of the ribs and the amount of deformity of the chest. The absolute differentiation between bronchopneumonia and atelectasis is not of great clinical importance from the standpoint of prognosis. The two are equally dangerous. The roentgenologist can aid the clinician in the prognosis of the probable outcome of the case, the gravity increasing in direct proportion to the degree of rachitic involvement, the deformity being the secondary consideration.

Bronchopneumonia occurs more frequently than lobar pneumonia and is of much greater frequency in the cases exhibiting severe involvement of the ribs and chest deformity.

ABSTRACT OF DISCUSSION

DR. WILLIAM A. EVANS, Detroit: A proper comprehension of all that has just been heard is dependent on a full knowledge of the mechanics of respiration—that is, what

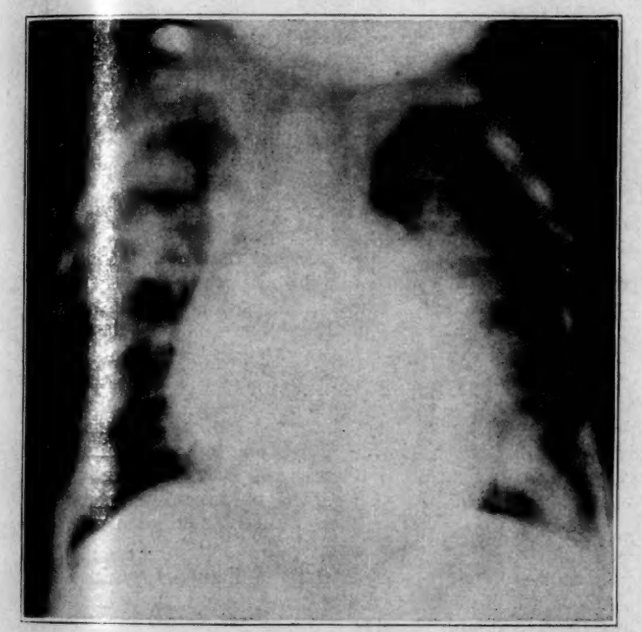

Fig. 5.—Marked rosary and chest deformity. Extensive rachitic involvement of the ribs. Fractures of the ribs. Central position of the heart. Scoliosis and kyphosis. Marked atelectatic strips, both lungs. Patient died; no autopsy obtained. Probable bronchopneumonia complicating the atelectasis.

certain tissue changes may interfere with this mechanism or what intrathoracic changes may result from improper respiration. The production of all the pathologic signs described by Dr. Bromer naturally follows if certain tissue defects are present and respiration is modified thereby. Thoracic deformities occur not primarily because the wall structures are weakened but because of the negative intrathoracic pressure. It is this negative intrathoracic pressure which explains the development of pectus excavatum, or funnel chest, and makes necessary devices to prevent caving in of the anterior thorax when operation is performed for such a deformity. Owing to this negative pressure, the lung constantly clings normally to the thoracic wall and is separated only in the presence of local disease or of some mechanical force. The presence of atelectasis in the new-born is explained in part by the insufficient increase in the size of the thorax which occurs at the inception of respiration, and the opposite condition occurs when the thorax expands unduly, for here one observes points at which the lung is not in contact with the chest wall, although it is apparently expanded to its capacity. The high mortality in cases showing extreme weakness of the thoracic wall can be explained by a condition simulating paradoxical breathing. In performing the operation of thoracoplasty, when a certain number of ribs are removed, the weakening of the thoracic wall may be so great that the lung on the operated side goes down in inspiration rather than out, and out in expiration rather than down, thus bringing about an interchange of air between the two sides. Such breathing is dangerous and accounted for many deaths in the early days of massive rib resections. Then, too, the atelectasis may result from hypoventilation—the condition of incomplete aeration of the lungs. Müller's observations gave good support to this view. In twenty-four operations for gallbladder disease or other abdominal condition, some degree of atelectasis or limited pulmonary consolidation was discovered in practically every case. The pneumonias associated with these terminal conditions result primarily from localized obstructions in the peripheral air passages; that is, atelectasis and pneumonia are closely related in their origin, as they are dependent on occlusions, atelectasis resulting first and then pneumonia developing in this subnormal tissue.

DR. RALPH S. BROMER, Philadelphia: I am glad that Dr. Evans brought out the mechanics of respiration as he did; also that he brought out the prevalence of upper respiratory infection which Park and Howland have emphasized in children with severe rickets. If the new conception, that pneumonia is primarily an infectious atelectasis, is fully confirmed, there would be all possible chance for pneumonia to occur in these cases of rachitic atelectasis, probably secondary to an upper respiratory infection. The degree of pliability of the chest wall is sometimes astonishing. I forgot to mention the presence of pathologic fractures in some of the slides, occurring especially in the lower ribs. If negative pressure were exerted on these ribs, I think that it could probably cause fractures, just as they are caused by outside or positive pressure.

SLIPPING OF THE LOWER FEMORAL EPIPHYSIS *

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CLEVELAND

In recent years considerable attention has been given to injuries of the upper femoral epiphysis, particularly to that type of injury known as "slipped" epiphysis. Orthopedic literature contains a considerable number of articles on injuries and displacement of the upper femoral epiphysis. Likewise, at practically every orthopedic conference or convention, cases of upper epiphysial injuries are demonstrated. At these meetings, however, I have never seen demonstrated nor heard mention of a case of injury to the lower femoral epiphysis.

Injury to the lower femoral epiphysis, especially avulsion with displacement, apparently is so rare that standard textbooks, such as those of Albee,[1] Jones and Lovett,[2] and Whitman,[3] make no mention of this type of injury. Scudder,[4] in his book (1926) on fractures, states that separation of the lower femoral epiphysis is extremely rare and occurs in children about 10 years of age. He further states that half of these injuries are compounded, the common displacement being anterior. He also adds that if the vessels are torn (i. e.,

* Read before the Section on Orthopedic Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Albee, F. H.: Orthopedic and Reconstructional Surgery, Philadelphia, W. B. Saunders Company, 1919.
2. Jones, Robert; and Lovett, R. W.: Orthopedic Surgery, ed. 2, New York, William Wood & Co., 1929.
3. Whitman, Royal: Orthopedic Surgery, Philadelphia, Lea & Febiger, 1917.
4. Scudder, C. L.: The Treatment of Fractures, ed. 10, Philadelphia, W. B. Saunders Company, 1926.

the popliteal) and there is much laceration of tissues, amputation should be performed. Böhler [5] states that where the epiphysis is slipped anteriorly, it may be reduced by flexing the knee strongly. After reduction the knee is brought back to a 90 degree flexion. He also warns of the danger to the popliteal vessels.

An estimate as to the rarity of this type of injury may be adduced from the fact that in Cleveland, a city of about a million population with marked diversity of industry, no surgeon with whom I have spoken recalls ever having seen a case of slipped lower femoral epiphysis.

Fig. 1 (case 1).—Condition before reduction.

At the Cleveland City Hospital (1,000 beds), the attending radiologist recalls seeing but one case, and his memory is not clear as to exactly the type of displacement present. At St. Joseph's Hospital, Lorain, Ohio, with a population of 45,000, where a considerable amount of bone and joint traumas are seen, two cases of dislocation of the lower femoral epiphysis have been seen. It is evident, therefore, that complete avulsion and dislocation of the lower femoral epiphysis is extremely rare.

The lower femoral epiphysis is not united to the shaft until the twentieth year. Because of this late union of the epiphysis to the shaft, injuries with displacement may result to this epiphysis up to the twentieth year. It is therefore apparent that injuries to or diseases of the lower femoral epiphysis before the age of 20 may result in premature arrest of ossification with a resultant greater or less shortening of the femur. It is entirely possible that by excessive stimulation the opposite may be true.

The capsule of the knee joint is attached to the femur just below the lower epiphysis and for that reason simple slipping of the epiphysis would probably not open up the knee joint.

This type of injury one would expect to see when the leg has been caught in a rapidly revolving carriage or wagon wheel.

REPORT OF CASES

The following are three cases which I am adding to the literature:

CASE 1.—A white boy, aged 15, was tackled while playing football and was thrown forcibly to the ground. He does not remember the position of his knee in falling. He experienced immediate severe pain in the right knee joint, which was held in a flexion of 90 degrees and which could not be straightened out. He was removed to St. John's Hospital, where I saw him in consultation the following morning. Examination disclosed the right knee moderately swollen and tense and held in a flexion of 90 degrees. Attempts to manipulate the knee were impossible because of the sharp muscle spasm and pain. There appeared to be no deformity, although a slight bulging was apparent in the popliteal space. The pain seemed to be greater here. There was complete absence of the customary discoloration.

A roentgenogram (fig. 1) revealed a complete avulsion fracture of the lower femoral epiphysis with rotation and posterior displacement. Under ether-gas-oxygen anesthesia, the displacement was reduced perfectly, as shown in figure 2, taken through the plaster cast. Reduction was accomplished as follows: The thigh was sharply flexed on the abdomen and the leg on the knee. In this position, strong traction was made on the knee and leg until the epiphysis was heard and felt to snap into normal position. Without moving the knee or leg, a plaster-of-paris cast was applied from the groin to the toes holding the knee in a flexion of 80 degrees. This cast was allowed to remain for four weeks, following which it was removed and walking with crutches permitted, weight bearing being gradually permitted. The end-results were perfect; within ten weeks the boy was playing basket-ball.

CASE 2.—A white boy, aged 10, fell and complained of a sharp pain in his knee, which he was unable to straighten. The attending physician was able to straighten the knee under anesthesia and applied a cast, which was permitted to remain for four weeks. The patient then came into the hands of another physician, who removed the cast and had a roentgenogram (fig. 3) made, which revealed the fact that there was an avulsion of the lower femoral epiphysis with marked anterior displacement. There was considerable callus formation and the epiphysis was uniting to the anterior shaft of the femur. At open operation this epiphysis was chiseled loose and replaced as near as possible to its normal bed. Unfortunately, the first roentgenogram is not available. Figure 4 shows the replacement, uniting to the femur with considerable callus formation. The end-results were apparently perfect. This boy was last seen jumping and running and there was no evidence of a limp.

CASE 3.—A white boy, aged 19, was injured by the explosion of a small compressed air tank, which struck him on the knee. He was immediately removed to a hospital, where an examination revealed the fact that there was a fracture at the lower shaft of the femur. There was no compounding of the fracture. A roentgenogram revealed an avulsion fracture of the lower femoral epiphysis with posterior displacement of the epiphysis. Two unsuccessful attempts at reduction were made under anesthesia. Several days later there were signs of gangrene in the foot and leg, and amputation through the mid thigh was done. Following the amputation the stump healed nicely and the patient left the hospital in good condition.

5. Böhler, Lorenz: Technik der Knochenbruchbehandlung, Vienna, Wilhelm Maudrich, 1929.

SYMPTOMS

The symptoms are ordinarily those of a fracture in the region of the lower end of the femur or knee joint; an abnormal bulging appears in the popliteal space if the epiphysis is displaced posteriorly, or an anterior prominence in anterior displacement may be seen. Shock is also usually present. Palpation may reveal the true condition. However, the roentgenogram should always be taken both as a confirmatory diagnostic and as a protective measure. The treatment consists of reduction and complete immobilization for about four weeks, after which gradual motion may be established. Closed reduction should always be attempted under complete ether or local or spinal anesthesia, since complete relaxation is imperative. For reducing posterior displacements, the knee should be forcibly flexed at less than a right angle (from 75 to 80 degrees) and in this position forcible traction is made on the leg, an assistant making countertraction on the thigh; at the same time the operator manipulates the displaced epiphysis with his free hand.

Reduction having been accomplished, a plaster-of-paris cast is applied from the foot to the groin, holding the knee in strong flexion, at least 90 degrees. This position serves to lock the epiphysis and to prevent its redisplacement. A roentgenogram through the cast should be made, and if the reduction is not satisfactory the cast should be removed and another attempt at reduction made. If the epiphysis is displaced anteriorly, reduction should be attempted with the knee in full extension, and if reduction is not obtained the knee should be gently flexed during the process of extension and counterextension. After reduction, the plaster cast should hold the knee in moderate flexion. In other words, one would institute practically the same treatment as in a supracondylar fracture of the femur. Occasionally, nail extension may be indicated,[5] especially in the compound cases. Should closed reduction be impossible, then open operation is indicated. The epiphysis is best exposed through an adequate incision along the inner or outer side of the lower thigh, or through both an inner and outer lateral incision. Should there be a laceration of tissues with a compounding of the fracture, the appropriate treatment for such an injury is indicated. In those unusually severe cases in which the large vessels have been torn, amputation may become necessary. In this connection I wish to call attention to the intracutaneous injection of physiologic solution of sodium chloride as a diagnostic measure to ascertain patency of the main vessels.

The prognosis after proper reduction is usually very good, function gradually returning to normal.

SUMMARY

1. Slipped lower femoral epiphysis is a rare type of injury.

2. Considerable force is necessary to produce this type of displacement.

3. This injury can occur up to the twentieth year because of the late union of the epiphysis to the shaft of the femur.

4. Closed reduction should be attempted only to be superseded by open operation if the former is unsuccessful.

5. The intracutaneous test with physiologic solution of sodium chloride should be used when one is in doubt as to the continuity of the popliteal vessels.

6. The prognosis is usually very favorable.

1021 Prospect Avenue.

ABSTRACT OF DISCUSSION

DR. M. L. KLINEFELTER, St. Louis: I agree with Dr. Kurlander that this condition is relatively rare as compared with the slipping of the upper femoral epiphysis and also that in no instance have I seen a case that was not purely traumatic rather than partially due to predisposition, as in the upper femoral epiphysis. He has called attention to the seriousness of this lesion. In the first place the soft structures are severely damaged in a complete separation of the lower femoral epiphysis. I have not seen a case in which either the peroneal or both peroneal and posterior tibial nerves were paralyzed. I have seen some cases in which the vessels were absolutely occluded, in which the leg became cold and the foot became cold and dark, and in some cases practically black. The very nature of the angle on this bone is an important factor in these cases; the fact that it is an epiphyseal separation rather than a fracture makes these vessels and nerves less likely to be cut. I have reduced some cases in which the foot had been

Fig. 2 (case 1).—Appearance after reduction.

cold for days, according to the history, and certainly for a number of hours according to accurate history, and the circulation was restored. The nerves have recovered in every instance in the cases in which I have had experience, even though they had been out for some time. The most important point aside from the actual injury is for the general practitioner to recognize the seriousness of the lesion early. It practically always results in a paralysis, and if displacement continues for any great length of time, must frequently result in an amputation. I have never seen a recent case. All the cases have been brought to me as a result of complications. I have had three out of twelve in which the growth of the lower femoral epiphysis was arrested; two of these cases were not recognized and in the other one the physician told me he was unable to control the child; so I feel this might have an important bearing on the arrest of growth. The other nine were immobilized. I have been able to reduce only one by the closed method. I am struck with the extreme severity of the injury when I open the capsule, which I have always had to do. In the second place a surgeon who has not the broadest skid available is not equipped to reduce slipped epiphyses

after they have been off a week or more and, regardless of the time, they frequently cannot be reduced without damage to the epiphyseal lines and one has to use a skid, have some one handle the leg, and then press on the epiphysis with gauze to effect reduction without actually crushing certain parts, even when they have been off for only a week.

DR. JOHN J. MOORHEAD, New York: My experience with what for want of a better name can be called a fracture dislocation of the epiphysis of the lower end of the femur is limited to two cases. Both were late cases and numerous attempts had been made under the closed method of reduction. Rather than resort to an open operation, the hazards of which have been mentioned, I inserted a transfixion pin in the upper end of the tibia and made a satisfactory reduction by traction, starting with a large poundage, 40 pounds (18 Kg.), and gradually reducing it. In one of these cases, the ultimate result was quite satisfactory; in the other, an epiphysitis developed, interfering with the growth of the limb. One of the earliest things that should be done is an immediate aspiration of the

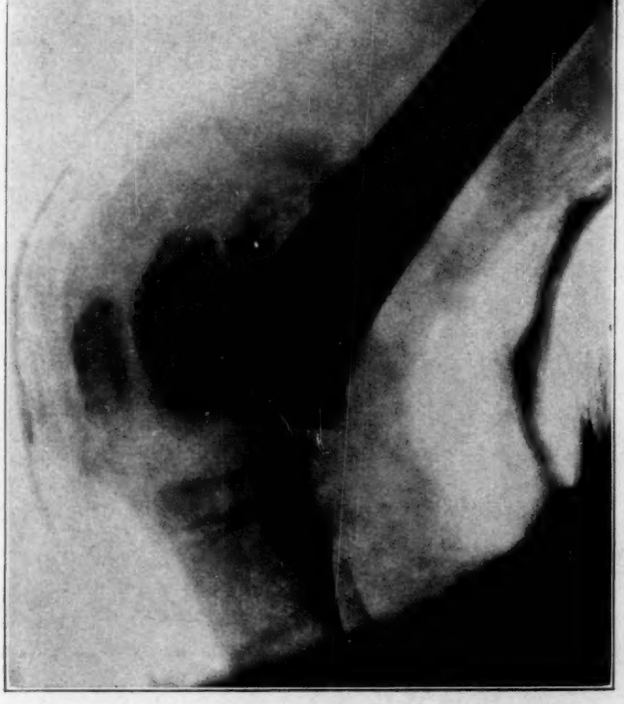

Fig. 3 (case 2).—Condition before reduction. Note callus formation.

knee joint, which relieves the tension and makes it easier to make the reduction. In the early cases, in the majority of cases, reduction can be made by manipulation under anesthesia. In the older cases, in which too diligent attempts have been made to reduce by the closed method and have failed, one should choose as the second choice skeletal traction. My experience is that the automobile is the big factor, and the majority of the cases I have seen have occurred as a result of the leg's being caught in a revolving wheel. Before the time of the automobile, I think that the typical way was in hitching on a wagon and having the foot caught in the revolving wheel, particularly of a large ice wagon. As to open operation, I have had no experience with it; it should be reserved for the type of case in which closed manipulation or the skeletal traction has failed.

DR. R. WALLACE BILLINGTON, Nashville, Tenn.: This is perhaps not quite so infrequent an accident as Dr. Kurlander would have one believe. As the last speaker has just said, it was known formerly as the "cartwheel" fracture, caused as he described it. I had the misfortune to have a bilateral case in a boy, aged 11 years, caused by an automobile accident four weeks prior to the time I saw him. It was of the type in which the two lower femoral epiphyses were separated completely and displaced anteriorly, and union had taken place at the time I saw him. I thought it might be possible to reduce this under an anesthetic, although I had little hope of it; I prepared for the operation, and after feeling the condition of the limbs under anesthesia, I found them quite solid, so proceeded to operate. The method already described was used—lateral incisions and skidding gently; that is, by using a broad skid and making as little trauma as possible to the epiphyseal cartilages, I skidded the epiphyses back into place. It was necessary to keep the knees flexed at a right angle or a little beyond to prevent easy redislocation. The limbs were put in plaster casts in a position slightly less than 90 degrees. This operation was done four years ago, and I have not been able to get this patient up to see me recently, but I have had word from the father and from the local physician that the boy is a strong, normal boy now with no interference with the growth of either limb. The limbs are straight with no deformity, and motion is unlimited. This case was not compound. There was little interference with the circulation at the time I saw him, and no paralysis. I feel that I was fortunate and had a bit of good luck in getting that sort of result in a case of this kind. It is the only case of bilateral dislocation of which I have been able to learn.

DR. H. W. MEYERDING, Rochester, Minn.: I am greatly interested in the report of Dr. Kurlander. It has been my experience that this fracture, or slipped epiphysis, commonly results from being caught in a wheel and twisted. Occasionally one sees, if early roentgenograms are taken, a stripping off or fracture of the lower anterior border of the diaphysis. Should one have the good fortune to see these patients early, immediate aspiration, followed by a period of three, four or five days' rest would be indicated. I have divided these fractures into two groups: first, those partially dislocated; second, those completely dislocated with or without fracture. My experience has been with those cases of long duration which have been completely dislocated anteriorly and which have gone on to fusion. At the meeting of this section a year ago I reported a series of 128 cases of Volkmann's ischemic contractures. At the time I studied these I was impressed with the similarity between that group and this group. I was impressed with the fact that although there is an impaired circulation in the fractured and slipped epiphyses it does not ordinarily develop. Thus in both one finds the epitrochlear space and the popliteal space filled with blood, and the upper fragment shoved downward and backward causing pressure on the blood vessels and nerves. The reduction of the fracture and the emptying of this blood clot are usually followed with improved function of the extremity. In my cases of long standing and in which malunion has occurred, I have found the split patellar incision useful. I reduce the epiphysis with a bone skid and at times I have found it necessary to maintain reduction by the use of bone screw; following this, plaster-of-paris casts are applied.

DR. PHILIP D. WILSON, Boston: In this period when it is difficult to know what every other physician is talking about anyhow, one ought to be awfully careful of the terms and I think I am justified in criticizing the title under which this is presented, which is "slipping epiphysis." I think what we are discussing is the usual traumatic separation, complete or incomplete. In the fracture service at the Massachusetts General Hospital during the last year, nine of these cases were traced over a period of five years from the time of injury, and out of these nine, six, or two thirds, showed complete arrest of growth. This was a striking finding and I was impressed with the fact that the shortening occurred so gradually that unless these cases were followed over a period of a long time one would not get the end-result with the total shortening. The total shortening in most of the cases was 2 or 2½ inches. In one case, part fracture and part separation, a portion of the epiphysis separated and stopped growing, and the other portion, where it had fractured higher in the bone, continued to grow, so a tremendous knock-kneed deformity resulted, and that boy has since had to come in for an osteotomy. I was impressed with the gravity of this injury and

the necessity of warning parents when it occurred that this result might be expected. It is a result that I am confident comes from the nature of the injury itself and not from the kind of treatment. All of the cases I described were reduced by closed reduction except one, which was an open reduction but one in which very good reposition had been obtained.

DR. ROLAND HAMMOND, Providence, R. I.: The paper and discussion so far have indicated that the author and speakers favor approximately the right angle position, or at least one of flexion. I should like to point out that that position is sometimes a dangerous one. Two or three years ago I had a fresh case of this condition in which, after manipulation, I applied a plaster cast in approximately a right angle position and a subsequent roentgenogram showed a perfect reduction. I did not check the roentgenogram until about four weeks afterward and was surprised to find that the epiphysis had slipped back into its original dislocation. Since then I have had several of these, and after reducing by manipulation, I have put the leg straight in complete extension and have never had any relapse. It seems to me that is the more rational position because the muscles are in a neutral position.

Fig. 4 (case 2).—Appearance after reduction, showing degree of flexion necessary to hold fragments reduced.

DR. J. J. KURLANDER, Cleveland: These injuries are extremely serious and I have heard several of the men in the discussion say that the shortening has been as great as 2 or 2½ inches. At the age of 19 there would be no appreciable shortening because the epiphysis is almost fully united to the shaft of the femur. The two other cases have occurred in patients within the past year and at this time I have no way of estimating what the future shortening, if any, will be. The children run, jump and play as normal children would. Dr. Moorhead has said that he does not use much force in the reduction, and if he cannot obtain reduction he inserts a pin through the condyles and treats the condition as he would a supracondylar fracture. That is what I said in my paper; namely, that these cases would require practically the same treatment as a supracondylar fracture of the femur. But if nail extension is used, considerable weight will have to be applied to obtain reduction. Dr. Wilson objected to my calling these cases "slipped epiphysis." He is probably correct, as the last two cases were avulsion fractures in which, as in the first case, there is a true slipping. Dr. Hammond said he believes that the relaxation of all the muscles is best secured when the leg is put out straight, and for that reason he advocates that position in holding the reduction. I have had only three cases, in two of which reduction was done and in the other amputation performed, and I would consider this fracture analogous to a Colles fracture. One may get perfect results with a Colles fracture, reduced and held straight, but a little more certain if the wrist is strongly flexed and the fragments locked, and I am afraid that I shall still continue to use the extreme flexion in holding a reduced slipped lower femoral epiphysis.

NONTRAUMATIC DISLOCATIONS OF THE ATLANTO-AXIAL JOINT*

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AND
FERDINAND SEIDLER, M.D.
CHICAGO

Recently we have observed several cases of dislocation of the atlanto-axial articulation which were not associated with trauma but resulted as a complication of acute infectious diseases.

With the development of the roentgen ray, cases of traumatic dislocation of this joint have been diagnosed more frequently. Several of the cases, which have been described in the literature, had no evidence of injury to the spinal cord, but most of them were associated with fractures. The injury together with its mechanism of production and the roentgenographic appearances have been thoroughly described in the literature.

Many cases of dislocation have been noted which are the result of destructive diseases, such as tuberculosis and syphilis, but we were unable to find any reported cases of simple dislocation without associated trauma or destruction of bone.

The cases included in this report were dislocations at the atlanto-axial articulation which were direct complications of upper respiratory infections.

ANATOMY

For a proper understanding of this condition, the normal anatomy of this region must be considered.

The atlo-axial articulation is complicated in that it is made up of four distinct joints, which permit a wide rotation of the atlas on the axis. These are the atlanto-odontoid joint of Cruveilhier, which is a pivot articulation between the odontoid process of the axis and the posterior surface of the anterior arch of the atlas; the syndesmo-odontoid joint, which is a sliding joint between the posterior surface of the odontoid process and the anterior surface of the transverse ligament; and the two gliding joints between the lateral masses on each side.

The articulating facets between the atlas and the axis are almost plane. The inferior facets of the atlas are almost circular, while the superior facets of the axis are more oval. The plane of the facets of the axis is of the most importance in that it is inclined downward from its posterior margin, both anteriorly and laterally. The joint capsules are loose, permitting a wide range of motion.

The ligamentous structures connecting these two vertebrae consist of the anterior and posterior atlanto-axial ligaments, which are continuous with the anterior

* Owing to lack of space, several illustrations have been omitted. The complete article appears in the author's reprints.

* Read before the Section on Orthopedic Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

and posterior spinal ligaments. The latter is reinforced by a membrane, which attaches the anterior rim of the foramen magnum to the axis.

The ligamentum transversum atlantis, which is the horizontal portion of the cruciform ligament, is one of the strongest ligaments. It is attached to the lateral masses of the atlas posterior to the odontoid process and is separated from it by a bursa.

The normal relationship of these vertebrae to each other, forming the neural canal, depends on the ligaments, and any loss of the ligamentous supports either by rupture or relaxation will result in dislocation and danger of subsequent compression of the spinal cord. Also in the forward dislocation of the atlas on the axis there may be an injury to the vertebral arteries as they pass through the foramina in the lateral processes of the atlas.

ROENTGENOGRAPHIC CONSIDERATIONS

This lesion can be demonstrated best by projections of the craniocervical region with the patient lying on his side. Stereoscopic views of the bones and joints of this region are better than the anteroposterior and the lateral views.

The patient's head should be placed so that its sagittal plane is parallel to the plane of the film, thus bringing it in direct line with the long axis of the spine, with the weight of the body resting on the shoulder. This can

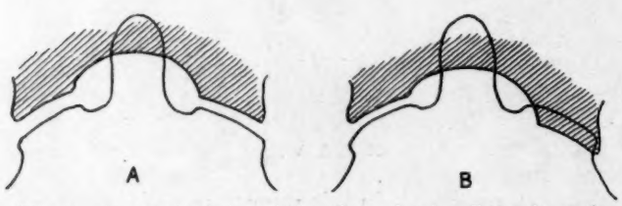

Fig. 1.—*A*, normal relation of the atlas and axis. *B*, overlap articulating surfaces in unilateral dislocations of the atlas on the axis.

be best accomplished by the use of a hard pillow or a block of proper thickness on which the film is laid.

The anteroposterior view is of value in this type of dislocation, especially for the demonstration of lateral displacement of the involved bones and the overlapping of the articular surfaces. This view is difficult for the roentgenologist to obtain, because on the direct anteroposterior projection the atlas and a part of the axis are covered by the shadows of the occipital or those of the mandible, or both. Hence, the view of the atlo-axial region is frequently interpreted as negative because one is not able to see these structures.

The patient should be placed in a supine position, the mouth opened as wide as possible and maintained by a cork or other roentgen transparent material placed between the teeth.

The central axis of the roentgen ray is passed through the center of the mouth, emerging just below the occiput. The result will be a clear shadow of the atlas, the odontoid process and the body of the axis.

The lateral view of the normal structures reveals the shadow of the anterior arch of the atlas in close apposition to the odontoid process.

The foramen magnum is exactly over the space behind the shadow of the odontoid process and anterior to the shadow of the posterior arch of the atlas. All the cervical bodies are in line with one another, being so arranged as to form a continuous curve with its convexity forward. A line drawn on the roentgen film from the anterior edge of the atlas will connect all the anterior margins of the cervical vertebrae in a continuous arc, while a similar line, if drawn from the posterior surface of the odontoid process downward, will describe an arc touching the posterior surfaces of the bodies of the cervical vertebrae and will represent the anterior margin of the spinal canal.

The shadow of the angle of the mandible is close to the anterior edge of the cervical bodies when the head is held in the normal position. The anteroposterior view will show an even spacing of the two lateral masses of the atlas with the odontoid process between them, and the joint spaces between the articulations of the atlas and the axis will be symmetrical and clearly visible.

ROENTGEN APPEARANCE IN THE DISLOCATION

In dislocations of the atlanto-axial joint these relations are disturbed according to the degree of forward or backward luxation and according to whether it is unilateral or bilateral.

In the anterior dislocation, the lateral view shows the anterior arch of the atlas relatively farther forward with respect to the odontoid. The lateral mass of the atlas and the spinous process of the axis do not converge but are divergent, so that the posterior arch of the atlas approximates the occiput more closely than normal, which shows that the atlas is tilted downward and forward on the axis.

In unilateral dislocations the atlas is tilted to one side, and hence the posterior arch appears broader than normal.

The shadow of the lateral masses are both visible, so that one is able to see the neural canal.

In the anteroposterior views the odontoid process of the axis is not seen in its normal relation to the atlas. The absence of the joint space between the lateral facets of the atlas and axis is pathognomonic of this condition.

There is either a complete overlapping or a diminution of the joint space on one or on both sides, depending on the type of dislocation.

In the unilateral type, where there is an overlapping only on one side, the opposite joint space is abnormally wide.

MECHANISM OF PRODUCTION

It is generally known and accepted that a large effusion into a joint, as the result of an inflammatory process, is frequently associated with considerable relaxation of the joint capsule and ligaments resulting in a pathologic dislocation.

Every one is familiar with the pathologic dislocation of the hip without bone destruction. It is logical to assume that a similar process could occur in the atlanto-axial articulations, which are mechanically weak because of the position of the articulating facets and large loose joint capsules.

The same process may take place in the anterior and posterior bursae, which separate the odontoid process from the atlas and the transverse ligament, respectively. The localization in the posterior bursa would naturally involve and weaken the transverse ligament, which is normally stronger than the odontoid process, and, hence, in traumatic conditions the process is fractured before the ligament is ruptured. With the relaxation of these structures and with the mechanical weakness of these joints, it is easily understood how these joints acquire a hypermobility with resulting dislocation.

There are three types of dislocation.

The slanting position of the articulating facets predispose to a forward position of the atlas either as a unilateral or a bilateral dislocation.

A bilateral posterior dislocation is impossible because of the approximation of the odontoid process to the posterior surface of the anterior arch of the atlas, but there may be a unilateral posterior dislocation. A further reason why the anterior type predominates may be explained by the fact that the center of gravity of the head is farther forward than the anatomic support. Any other factors producing flexion of the head on the neck, such as recumbency with pillows under the head, will also predispose to the forward dislocation.

Fig. 2 (case 1).—Lateral view showing forward displacement of the head and atlas on the axis and other cervicals. Note the position of the odontoid process near the posterior arch of the atlas.

ETIOLOGIC FACTORS

All of the patients had an upper respiratory infection, which preceded the symptoms in the neck from a few days to two weeks. Patient 1 developed an arthritis in other joints and a pericarditis before the neck involvement. Patient 2 had scarlet fever and a throat infection, which was thought to have been diphtheria, but this was not proved by cultures. Patient 3 had a definite acute coryza. Patient 4 had a cold and tonsillitis, while patient 5 had a definite acute attack of influenza.

From the foregoing histories it is evident that there was a definite relationship between the previous infection and the disability of the neck, and since it happened in five cases it cannot be spoken of as accidental but rather as a definite etiologic factor.

Since none of these patients were seen by us during the original acute illness, it was not possible to determine the exact type of infection, although the streptococcus seemed the most probable.

The infection may become located in these articulations, either through the blood stream or by way of the lymphatics, since there is a direct connection of the drainage from the pharynx and the upper cervical spine, through the retropharyngeal glands, and these with the deep cervical glands, which were palpable in cases 2 and 3.

SYMPTOMS

The striking feature presented in all these cases was the torticollis, without evidence of nerve injury except for the peripheral nerve irritation.

There was a few degrees of motion in flexion and extension. Rotation in the direction increasing the deformity was slight, but none was possible toward the midline. Any passive attempts at correction of the deformity—even the slightest jarring of the head—elicited severe pain.

On palpation the spinous process of the second cervical vertebra was very prominent and it deviated toward the side to which the chin pointed. In an attempt to correct the deformity, the deviation increased, while in an attempt to exaggerate the deformity it approximated the midline.

Because the atlas and the axis are locked in the dislocation, no rotation of the atlas on the axis is possible.

The patient, in attempting to correct the position, moves the axis together with the lower cervical spine in the opposite direction. Therefore, in increasing the real pathologic rotation, the compensatory motion in the opposite direction is no longer present and the spinous process is found in the midline. This phenomenon was described by Sudeck, in a report of two cases of atlo-axial dislocation.

In a bilateral dislocation, one is able to palpate the lateral bony masses in either side of the neck just posterior to the angle of the mandible.

In unilateral anterior dislocation, the rotation of the chin is away from the dislocated side.

It is a rotation dislocation with the odontoid process serving as an axis up to a certain degree of rotation. This symmetrical dislocation is stopped as soon as the posterior movement of the opposite process cannot go farther, and hence it serves as a fixed point and this now becomes the axis. As the rotation is then continued, the articulating surface of the atlas moves farther forward, so that there is no apposition with the articulating surface of the axis. This results in the locking of the bones and the fixation of the dislocation.

In the unilateral posterior dislocation the rotation is toward the dislocated side and the articulating surfaces on the opposite side are separated from each other a little farther than normal.

Fig. 4 (case 1).—Lateral view after reduction. Note now the normal relations between the axis and the atlas.

TREATMENT

The treatment naturally consists of the reduction of the dislocation. This may be accomplished (1) by constant traction, or (2) by forcible manipulation under anesthesia. Four cases were treated by traction and one by manipulation.

Traction is best accomplished by placing the patient on a Bradford frame for a few days. During this time the patients become accustomed to the position. It was remarkable how comfortable the patients became in a short time, although two patients previously refused to lie down and were propped up in bed in a sitting position. As soon as the patient was comfortable, a slight constant traction was applied by means of a head halter and weight over a pulley at the head of the bed. The traction was applied in a longi-

tudinal direction at first. With relief of the muscle spasm, the traction was increased, and the direction of the traction was altered so as to obtain hyperextension of the head and the neck.

The hyperextension was obtained by placing a rolled sheet transversely under the neck and by bending the side bars of the frame at the level of the lower cervical spine.

It should be emphasized that the important features of the treatment are the constancy of the traction, the fixation of the body to the Bradford frame, which immobilizes the entire spine, and the hyperextension.

In the course of a few days a definite improvement of the position was noted with an increased range of motion. The progress of the reduction and the course of the treatment as to the length of time of recumbency and the amount and direction of the traction was directed by physical examination and roentgenograms. The time necessary for the reduction varied from eight days to five months.

Case 1, which required five months for reduction, was bilateral and the most severe type observed. Because of the poor general condition of the patient—especially her cardiac condition—extreme care was necessary. As

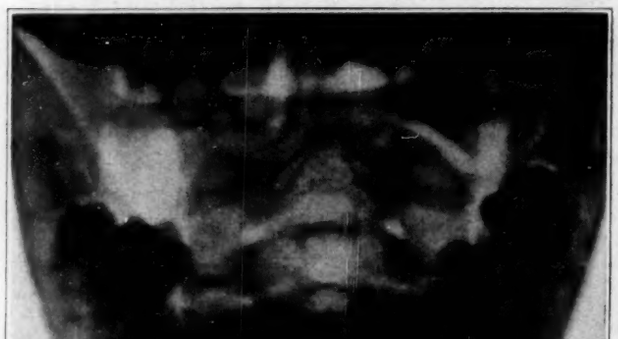

Fig. 6 (case 3).—View through open mouth again showing dissimilarity at lateral joints between the atlas and the axis. Overlap of articulating facets on the right side.

this was our first case to be treated in this manner, we did not force the treatment, and, hence, more time was necessary.

The duration of the dislocation did not seem to influence the length of time necessary for the reduction.

After the reduction was accomplished the traction was continued for a variable length of time, and then a plaster cast was applied, extending from the occiput and chin down to the lower ribs. In a few days the patients were permitted to sit up and soon afterward they were ambulatory. After a few weeks' time only a plaster collar was applied, which gave more freedom of motion. When this collar was removed, a cotton roll collar was applied for protection and active motions were encouraged.

Patient 5 was treated by forcible manipulation under anesthesia, because the parents did not wish to have the patient hospitalized for a prolonged period of time.

Under complete anesthesia with muscle relaxation the deformity persisted. In the manipulation moderate traction was applied to the head, increasing the tilt of the head to the right and rotation to the left. From this position the head was slowly rotated to the right and tilted to the left. While this procedure was being accomplished there was a definite snap, which was felt and heard. After this, the head and neck assumed the normal position and the head was freely movable on the neck in all directions. A plaster cast was applied to the head, neck and thorax with the position overcorrected; i. e., with the head rotated to the right and tilted to the left.

Although the reduction immediately after this procedure was satisfactory, it was shown in the later course that traction could not be dispensed with.

The forcible manipulation reduced the deformity, but the plaster-of-paris cast maintained the compensatory rotation in the lower cervical spine, where, as in the traction method, both the original and the compensatory rotations were corrected simultaneously.

CONCLUSIONS

1. In five cases of nontraumatic dislocation of the atlanto-axial joint, occurring in children from 8 to 11 years of age, one was a bilateral forward dislocation while four were unilateral—two anterior and two posterior.

2. These occurred as a complication from one to two weeks after an acute upper respiratory infection.

3. They presented a rather characteristic torticollis deformity, with marked fixation and pain on attempted motion.

4. Roentgenograms showing this dislocation are difficult to obtain when the extreme deformity is present, and, hence, they are usually interpreted as negative. But when a good view of this region is seen, the dislocation is shown in an overlap of the lateral articulating facets. As the dislocation is further reduced, the overlap diminishes and the joint space reappears.

In the unilateral anterior dislocation the chin deviates to the opposite side, while in the posterior dislocation the chin deviates toward the same side.

The lateral view in the anterior dislocation shows the anterior arch of the atlas to be misplaced relatively far forward with respect to the odontoid.

5. All these dislocations were reduced—four by means of constant traction in hyperextension and the other case by forcible manipulation under anesthesia.

REPORT OF CASES

CASE 1.—H. K., a girl, aged 8 years, was admitted to the hospital, Nov. 26, 1928, because of swelling, stiffness of the neck and inability to open her mouth. Three months before she had had a swelling of her fingers and of her right foot. At times the symptoms were worse in the fingers, and at other times they were worse in the foot. One month later the neck became tender and swollen in the back. She was unable to open her mouth because of pain. She could walk about with care and sit, but she refused to lie down because recumbency aggravated the pain in the neck. There was headache and general weakness, with the loss of 10 pounds (45 Kg.) in weight. She was sent to the hospital with a diagnosis of cervical Pott's disease.

The family history was negative for tuberculosis.

When first seen the swelling of the fingers and of the foot was no longer present and there was free motion in all the joints. She was able to walk but took her steps with extreme care so as to avoid any jarring of the head and neck, which she supported with both hands. She sat down with extreme care. The neck seemed short. The head was held forward and rotated to the right with a slight tilting to the left. There was no active motion in any direction. Any attempt at passive motion elicited great pain. A marked bony prominence could be felt posteriorly to the right of the midline, which was the spinous process of the second cervical vertebra or axis. The transverse processes of the atlas could be felt on both sides of the neck, more distinctly on the right side, just above the

angle of the jaw. There was no evidence of spinal cord or sympathetic nerve involvement in that all the reflexes were present and normal and the pupils were equal and reacted to light and in accommodation. The only nervous symptoms were the subjective ones of neuralgia and pain in the head. There was no swelling in the fingers or foot and all motions were normal. The examination of the chest and abdomen was negative, except for the cardiac condition, which consisted of enlargement to the left with a systolic murmur over the apex, which was transmitted to the left.

Laboratory observations showed a slight anemia in the blood picture with a normal white blood cell count.

The urine was normal and the Pirquet and Wassermann reactions were negative.

The lateral roentgenogram of the upper cervical vertebrae, taken November 28, revealed a marked forward dislocation of the atlas on the axis. It was tilted so that the anterior process lay anterior to the body of the axis. The distance between the posterior process of the atlas and the spinous process of the axis was greatly increased. In fact, it was displaced upward and forward so that it appeared to be in contact with the occiput. Furthermore, it approximated the odontoid process so closely that it was difficult to understand or conceive where there was space sufficient for the spinal cord. The atlas was not dislocated directly anterior but was also tilted to the right, so that one was able to see through the neural canal.

The anteroposterior view taken the same date through the open mouth presented difficulties of analysis. The most striking feature was the appearance of a circular opening on the bony ring that lies directly over the vertebral column and was interpreted as the neural canal of the axis. The lateral articulations of the atlanto-axial joint could not be made out because the vertebrae overlapped each other, obscuring them, and the odontoid process was displaced from its normal position. The right lateral process of the atlas was displaced farther toward the right and in it the transverse foramen could be seen.

December 6, the patient was placed on a Bradford frame, and two days later extension was applied by means of a head halter with weight and pulley traction, which gave immediate relief. In ten days there was less rigidity and the neck was much straighter. One week later the patient could open her mouth much wider, and her head was in good position.

Roentgenograms taken Jan. 2, 1929 (fig. 2), still showed a marked forward displacement of the atlas with some tilting both forward and to one side on the axis. The posterior process of the atlas was not as close to the occiput because the vertebra was not tilted as far as it was at first. This diminution of the tilt was also shown in that the anterior process did not extend downward anterior to the axis as far as in earlier views. The odontoid process was seen plainly in its normal position and there was no evidence of any pathologic changes. The rather marked compensatory lordosis, seen in early views, was considerably diminished. The anteroposterior view (fig. 3) also showed a diminution of the tilt of the atlas on the axis as the bony ring was now seen to be more oval and not circular as it had appeared originally. The joint spaces of the lateral articulations between the atlas and the axis could not be seen, but one could see the articular processes, which overlapped each other on both sides.

The amount of the constant traction was increased with greater hyperextension and the accompanying roentgenograms were obtained May 6. The lateral view (fig. 4) showed the atlas in normal relation to the axis, and the anteroposterior view (fig. 5) showed the normal joint spaces of the lateral articulations between the atlas and the axis. The transverse processes of the atlas were symmetrically placed with respect to the odontoid, and the transverse foramina could not be seen.

September 25, the patient could open her mouth the natural width, the position of head and neck was normal, and there was no restriction of motion. Traction was removed and a plaster cast was applied from the chin and occiput down to the crest of the ilium.

November 2, she was discharged from the hospital wearing the plaster collar. She could walk and sit without discomfort.

December 30, the cast was removed. There was no deformity of the head or neck, but there was some restriction of motion in all directions. Feb. 10, 1930, there was limitation of motion to the left, but actively she could rotate the head to the right about 45 degrees. Lateral bending, flexion and extension were almost free. The spinous process of the axis was still more prominent than is normal, although it was in the midline.

Roentgenograms, February 10, showed in the lateral view that the atlas was farther forward on the axis than it was in the previous roentgenogram and there was an increase of the cervical lordosis. The anteroposterior view revealed a decided narrowing of the joint space of the left atlanto-axial articulation. As these observations indicated a recurring dislocation of the atlas on the axis, a leather collar was made and applied to maintain hyperextension.

CASE 2.—C. A., a girl, aged 10 years, was admitted to the hospital, Aug. 13, 1929, because of a crooked neck, which was painful on attempted motion. Four months before she had had scarlet fever and diphtheria (?). The second day she had received an injection in the buttock and two days later was unable to move her legs. Then, the following day she could not move her arms and the next day she was unable to move her neck. Four days later she regained the use of her arms and legs. However, she did not regain normal motion of her neck, although the pain disappeared after two months. There was no swelling of the neck at any time. The rest of the personal and family history was irrelevant.

The child was undernourished but was otherwise normal, except for the deformity of the head and neck. The head was

Fig. 7 (case 3).—Appearance one month later after clinical cure. The two joints are now similar.

turned to the right with the neck flexed so as to depress the chin on the chest. The head was tilted slightly to the left. Actively she was able to rotate the head a few degrees more to the right, but there was no active rotation to the left, and passive attempts caused pain. There was only a few degrees of flexion or extension. All reflexes were normal.

Laboratory observations, including the Wassermann and Pirquet reactions, were negative. A roentgenogram taken August 12, through the open mouth, showed in the anteroposterior view an overlapping of the articular surfaces of the atlas and the axis on the left side, while on the right side they did not overlap, and the normal joint space could be readily seen. The position of the mandible indicated a tilt of the head to the left, with rotation of the head to the right. There was a compensatory rotation below the second cervical vertebra to the left, as was shown by the position of the transverse processes.

The lateral view, taken on the same date, showed the atlas a little farther forward on the axis than is normal.

August 14, the patient was placed on a Bradford frame with extension by means of a head halter, weight and pulley traction. She was comfortable immediately. After eight days' treatment in this manner, roentgenograms were taken which showed the head in normal position. The left atlanto-axial articulation, which could not be seen in the previous view, was now plainly visible, although the joint space was not as wide as it was on the opposite side.

September 17, the deformity was well corrected and there was free motion within almost the normal limits in all directions.

September 18, the traction was removed and a plaster collar was applied. September 29, the patient was discharged from the hospital, wearing the plaster collar.

CASE 3.—J. P., a boy, aged 9 years, entered the Presbyterian Hospital in the pediatric service of Dr. Grulee, Oct. 6, 1929, with the complaint of a stiff neck and fever.

He had caught cold in the head three weeks before admission. About two weeks later he began to complain of the stiffness of the neck and of pain on motion. He was taken to a hospital and discharged after three days with a diagnosis of neuralgia of the neck and tic douloureux. The pain became so severe that he was unable to move his head or permit the least jarring. In fact, he was exhausted from holding his body tense. He was suffering with a sore throat and fever during this time. He was always conscious and had no symptoms of meningeal irritation. His past history was negative except for frequent sore throats and a tonsillectomy four years before.

Fig. 8 (case 4).—Original deformity.

The patient was well developed and well nourished. He lay in bed with his head rotated to the right almost 90 degrees. There was a marked involuntary muscle spasm, and the left sternocleidomastoid muscle was very tense. There was bilateral cervical adenitis, but the glands were not tender to palpation. The spinous process of the second cervical vertebra was very prominent posteriorly and to the right of the midline.

There was no active motion and any attempts at passive motion elicited extreme pain. There were no other abnormal physical observations, except for evidence of sore throat, which consisted of a red granular appearance of the tonsillar pillars and pharynx.

Roentgenograms were taken on admission to the hospital. Figure 6 showed a condition similar to that in case 2 in that there was an overlapping of the lateral articulations between the atlas and axis on the right side and an increase of the joint space on the left. But it must be noticed that in this case the head was rotated toward the dislocated side, which indicated a posterior subluxation.

October 10, he was placed on a Bradford frame and traction was applied. After one week of treatment he did not complain of pain and could move his head through an arc of about 30 degrees. The traction was then increased and one week later he was able to rotate the head actively 30 degrees to the left of the midline.

Roentgenograms taken, October 25 (fig. 7), showed both joints to be symmetrical. December 5, the traction was removed and a plaster collar applied. December 15, he was ambulatory without any discomfort. December 22, when the plaster collar was changed, there was normal position of the head and free motion in all directions. Another plaster collar was applied for protection, and he was discharged from the hospital, December 24. Two months later the collar was removed.

CASE 4.—N. D., a boy, aged 11 years, entered the hospital Sept. 9, 1929, complaining of a stiff and painful neck of two months' duration.

He had contracted a cold and a sore throat two months previously while watching an airplane take off, and two days later he complained of stiffness and pain in his neck. The pain became gradually worse, so that the least jarring was unbearable. There was a feeling of soreness in the mandible. There was no history of injury or previous attacks of similar trouble. The family and previous history was irrelevant.

The boy was well nourished and well developed. He did not appear to be ill. His head and neck were shifted to the right. His chin pointed to the right with some tilt of the head to the left and slightly forward.

There was a right convex cervical scoliosis with a compensatory scoliosis to the left in the upper dorsal region. There was very little motion present. Actively, he could rotate the head a little farther to the right but not to the left. There was a little motion in flexion but no extension. Attempts to move the head passively on the neck caused much pain. When attempting to lie down, he first lay on his abdomen and while supporting his head with both hands rolled over on his back, which was a less painful procedure than to lie down naturally. Except for the foregoing observations, the physical examination was negative, as were the laboratory observations, including the blood examination and the Pirquet and the Wassermann reactions.

Roentgenograms showing the condition of the atlanto-axial region at the time of admission could not be obtained because of the deformity and the patient's inability to open his mouth wide enough. He was placed on a Bradford frame with traction on the head. October 11, the position of the head was much improved.

Roentgenograms taken at this time showed in the lateral view the atlas tilted on the axis so that the shadow was oblique and thrown on the occiput. The anterior view (fig. 9 *A*) aided greatly in recognizing the displacement, which was the same as in figure 6.

After further treatment with traction and greater hyperextension, roentgenograms taken November 13 showed normal relations of the atlas and the axis (fig. 9 *B*). The traction was removed and a plaster cast applied. Jan. 8, 1930, when the cast was changed there was free range of motion of the head and neck, and he was discharged, January 10, wearing this collar. February 3, the plaster collar was replaced by a roll collar of cotton and bandage.

CASE 5.—E. C., a girl, aged 9 years, was sent to one of us (F. C. S.), June 19, 1929, for the correction of a deformity of the head and neck, which had been previously diagnosed as an hysterical torticollis.

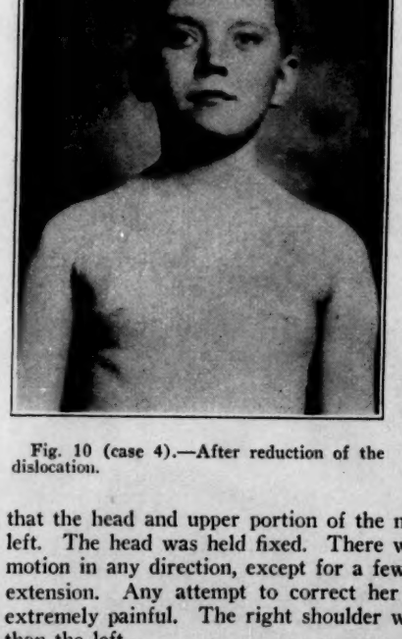

Fig. 10 (case 4).—After reduction of the dislocation.

Her past history revealed that she had had an acute attack of influenza, Christmas, 1928. One week later she developed a torticollis, which had persisted. There was no history of trauma or other illness.

On examination she presented the appearance of a rather anemic, undernourished child. The head was tilted extremely to the right and rotated to the left. There was a marked right cervical scoliosis in the lower cervical region, which gave the impression that the head and upper portion of the neck were shifted to the left. The head was held fixed. There was no active or passive motion in any direction, except for a few degrees of flexion and extension. Any attempt to correct her position passively was extremely painful. The right shoulder was held elevated higher than the left.

The laboratory observations, including the Pirquet and the Wassermann reactions, were negative.

A roentgenogram taken through the wide open mouth (fig. 12), June 26, showed a marked rotation of the head, so that

the mandible deviated to the left of the midline with some tilting of the head to the right.

The lateral articulation of the atlas and axis on the right side was overlapped completely, while on the left side the joint space was visible. The right transverse process of the atlas was closely approximated to the third cervical vertebra, which demonstrated that it was completely displaced and tilted forward. The lower cervical spine showed plainly a marked compensatory rotation as the third and fourth vertebrae were seen to be projected as a lateral view instead of the antero-posterior view.

There was a right convex scoliosis in the lower cervical spine. The lateral view, taken the same day, showed the odontoid process intact and the atlas displaced forward and tilted to one side.

June 23, forcible reduction was accomplished, as described later in the treatment.

She was held in a cast for twelve weeks and careful active and passive motions were then encouraged. Since the compensatory rotation did not disappear, traction was applied for two weeks, which markedly improved her condition. Another plaster collar was applied for six weeks with the head in the normal position, and on the removal of this collar the head was in good position, but rotation was still restricted.

She was left without support during the day but had slight traction applied during her sleep. When last seen, there was no deformity or restriction of motion.

A roentgenogram, May 19, 1930, showed the atlanto-axial joint spaces to be symmetrical. The scoliosis and rotation of the lower cervical spine were markedly diminished. The lateral view on the same date showed almost normal relations of the atlas to the axis. After this time, the immobilization was discontinued except for slight traction during her sleep.

7 West Madison Street.

ABSTRACT OF DISCUSSION

DR. FRANK C. MURPHY, Chicago: If this is done under forced manipulation, is there ever any possibility of catching the odontoid process forward on the cord and injuring the cord?

DR. C. A. STONE, St. Louis: I should like to ask why the authors feel it is necessary to keep traction on these patients for that period of time. I do not think that one needs to be particularly afraid that damage is to be done in manipulating these necks if a little care is taken about it, if one is not rough, as is a chiropractor, and if one will depend more on manipulation than on traction. Some necks can be retained with an ordinary Thomas collar. Some need a plaster collar to hold them in position.

DR. ROBERT D. SCHROCK, Omaha: These patients become so tired of the plaster collar fixation that it requires all the facilities of the physician's mind to persuade them that that thing is still a little longer necessary to wear. Owing to the fact that I was not able to persuade some individuals, particularly those with cervical spine injuries, that it was necessary to remain so for longer than twelve weeks, it became necessary to devise a simpler type of fixation and something that could be used in minor cervical injuries or for the period of less rigid fixation when the plaster collar is removed. I employ a comfortable, light, readily applied and, unfortunately, readily removable piece of apparatus that can be made by any mechanic. It gives a nice fixation, the basis being a sternal piece and the portion holding the head on the chin cup being simply a piece of molded metal covered with leather. It is adaptable for this later stage of the serious cervical spine injury or for the minor cervical or painful necks, the arthritic type.

DR. HAROLD SWANBERG, Quincy, Ill.: All of the authors' cases were in children; but this condition may occur in adults. I saw an atlanto-axial dislocation in an adult, which occurred during the World War. A soldier, aged 22, suffered from tonsillitis and measles. A month after the tonsillitis his tonsils were removed. The evening of the operation, his neck became suddenly stiff, remaining in that condition when he was sent to the general hospital where I was stationed. I first saw him six months after the onset of the stiffened neck. He then had a rigid, painful neck with depressed chin, and a roentgen diagnosis of osteoarthritis of the first and second cervical vertebrae. The only other clinical symptoms were persistent headaches. Unfortunately, the first roentgen diagnosis was incorrect, there being no evidence of osteoarthritis but of a complete anterior dislocation of the atlas. I presume it will be concluded that this dislocation was a traumatic one, occurring at the time of operation, with the operation performed under general anesthesia. The tonsils were removed under a local anesthetic. The soldier and the surgeon stated that no undue force was used. The pain and stiffness in the neck came on suddenly, the night of the operation. Unfortunately, the condition was not correctly diagnosed for six months. At that time, the patient was given a general anesthetic and suspended by his neck, and various manipulative efforts were made but the dislocation remained unchanged. Every anterior dislocated atlas that I have examined shows one clinical sign not mentioned by the authors. The posterior nasal pharynx is greatly reduced in size because of the projecting anterior arch of the atlas. By placing the finger in the mouth, one can readily palpate the large projection.

DR. E. J. BERKHEISER, Chicago: Undoubtedly this is not a new thing, but it has not been diagnosed as often as it should have been. It is, I think, because good roentgenograms cannot be obtained with the extreme deformity and because the roentgenograms are not good that they are usually interpreted as being negative. In regard to the length of time of treatment, I feel that this is really quite variable. We may have treated them with traction longer than was necessary. Probably the necks could be held shortly after the reduction with some simple appliance.

Clinical Notes, Suggestions and New Instruments

APOPLEXY OF KIDNEY BED

ANDREW BONTHIUS, M.D., PASADENA, CALIF.

Raye, in 1839, first reported a case of spontaneous perirenal hemorrhage. Wunderlick, in 1846, who was the second to report a case, called it apoplexy of the kidney bed. There have been sixty-two cases reported since then, very few of which were correctly diagnosed preoperatively or ante mortem.

Following is the report of another case:

A woman, aged 55, 5 feet 8 inches (173 cm.) tall, weighing 200 pounds (91 Kg.), a widow working as a domestic up to the onset of the present illness, had enjoyed good health previous to 1923. In that year, she had had a panhysterectomy with complete recovery, and later influenza. In 1924 she had extensive burns of the arms, hands, face and dorsal surface of the trunk, and was in a hospital thirty-five days. She apparently completely recovered.

In 1925 she had a cholecystectomy and an appendectomy; during convalescence, albumin and granular casts were found in the urine, and frequent erythrocytes, and for several days she suffered excruciating pain in the suprapubic and lumbar regions. The cause of this pain was undetermined. She was in the hospital forty-eight days and completely recovered.

The present illness began Sept. 4, 1929, with frequent urination that lasted only that day. September 5, while working in the kitchen, she had a terrific pain in the upper left quadrant of the abdomen. She had no urinary disturbances since coming under observation. September 8 the rigidity and pain in the left rectus were sufficiently decreased to permit the palpation of a mass the size of a large orange near the posterior abdominal wall in the region of the left kidney. There was a slight rise in temperature. The blood pressure was 140 systolic and 80 diastolic; pulse, 72, and respiration, 18.

The mass increased in size from day to day.

On cystoscopic examination the left ureter appeared to be inflamed, and the right one normal. Ureteral catheters were inserted to the pelves. The trigon and vesical neck were inflamed; the inflammation extended to the posterior urethra. The bladder capacity was 200 cc. Phenolsulphonphthalein appeared first in the left side in five and one-half minutes and

in the right side in four minutes; a total of 40 per cent was eliminated in fifteen minutes.

The catheterized urine from the bladder amounted to 11 cc. and contained a few erythrocytes and leukocytes. The urine collected from the right kidney and from the left kidney, each contained some erythrocytes and leukocytes.

The bilateral kidney function test was as follows: The amount in the right kidney was 5 cc., 12 per cent; the amount in the left kidney was 6 cc., 14 per cent, a total of 26 per cent.

The bladder culture gave a pure growth of *Staphylococcus albus*.

A trace of sugar was shown in two of four different urinalyses. Blood counts taken between September 7 and 20 revealed: erythrocytes, from 3,500,000 to 4,440,000; leukocytes, from 8,900 to 5,300, and hemoglobin, from 70 to 47 per cent.

Films of both kidneys taken Sept. 11, 1929, without catheters in position showed that the right kidney was normal in size, shape and position, but that the left was enlarged to more than double its normal size, and was nearly round. Its lower pole lay about 5 cm. above the iliac crest. The roentgenologic diagnosis was enlarged left kidney.

September 19, a single anteroposterior view of the urinary tract was taken with a catheter in the left ureter and the left kidney pelvis injected with opaque material. The kidney pelvis and its calices appeared large but not distended, and the secondary calices showed fairly clear-cut ends. The shadow of the kidney pelvis and its calices appeared to be in the upper half of a soft tissue mass which extended from the eleventh rib downward to slightly below the crest of the ilium, measuring about 20 cm. This soft mass had been repeatedly seen on previous films. I believe it was due to a mass in close relation to the left kidney.

The size of the mass increased from day to day until by palpation it became apparently about 6 inches in diameter.

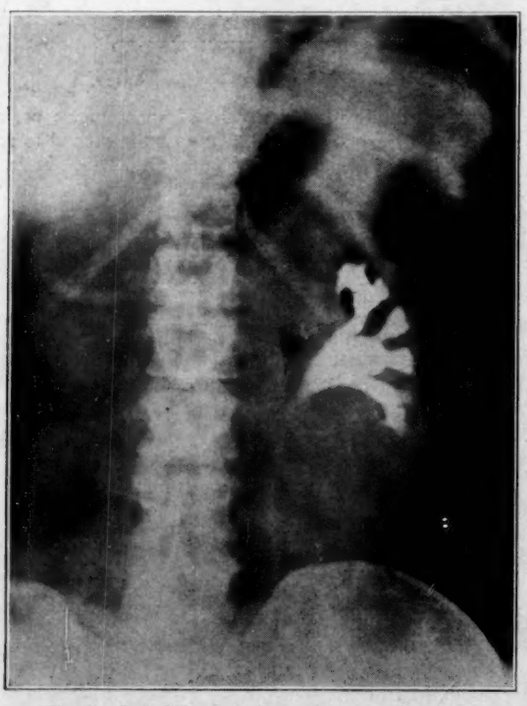

Fig. 1.—Left kidney shadow prior to nephrectomy.

Lenk and, later, Meyer stated that the syndrome of (*a*) severe pain in the abdomen in the kidney region, (*b*) internal hemorrhage, and (*c*) evidence of tumor in the abdomen signally increasing in size are usually present in perirenal hemorrhage. A review of the accompanying blood reports robs one of any certainty that an internal hemorrhage has taken place. There were only two constant and distinct symptoms present that warranted more than a working diagnosis preoperatively; they were (*a*) pain in the abdomen, left side, and (*b*) a large mass, the origin of which could be determined only tentatively. The difficulty was increased by the similarity of the chemical and microscopic examinations of the urine from the left and the right kidney.

The preoperative diagnosis made was (1) hypernephroma of the left kidney, or (2) retroperitoneal tumor in the left side.

An exploratory operation was performed, September 21, by Dr. W. F. Manuel. Under gas-oxygen anesthesia, a curved incision was made through the skin of the left flank and down

Fig. 2.—Hematoma and kidney removed en masse.

to the perirenal fat. Exploration revealed a smooth, firm, symmetrical tumor, about the size of a large coconut, easily freed from the surrounding fat, movable, but firmly attached to the kidney. It was somewhat mottled gray and granular in appearance, resembling an organized blood clot. The tumor, which was easily delivered through the wound, was removed. There was little bleeding. The remaining fatty tissue approximated so as partially to fill the large cavity, and three wicks were inserted for drainage. The wound was closed in layers and the patient returned to the ward in good condition.

The wound drained freely for ten days. The drainage tubes were removed, October 4. The patient was up, October 11, and discharged, October 13, three weeks after the operation.

A phenolsulphonphthalein test on the right kidney totaled 40 per cent, October 8.

The pathologic report by Dr. R. M. Crumrine showed a specimen weighing 688 Gm., comprising a kidney which appeared normal and measured 11 by 5 by 4.5 cm. Attached at the hilus was a much larger mass measuring 17 by 9 by 6 cm., that appeared to be perirenal fat infiltrated with partly organized blood clot. The kidney hilus was attached to the mass by two or three fibrous bands. The mass itself weighed 550 Gm., was covered by a thin capsule, and had the shape of an enormous suprarenal gland. The gross appearance of this specimen suggested a hemorrhage into the suprarenal. There was no suggestion of cancer. The kidney proper showed a smooth subcapsular surface and was normal in every respect, except that there was increased fat in the pelvis and a few small cysts.

The histologic slides showed organizing blood clot intermingled with fatty tissue. There were alternate areas of fresh cells and fibrosed organized clots, indicating oozing or repeated hemorrhage for at least ten days.

Sections from the kidney proper showed it to be in good condition, consistent with the age of the patient. There were only rare fibrosed glomeruli.

The walls of the arterioles were slightly thickened, but not more than would be expected at this age. There was no atheroma.

There was slight definite acute inflammatory reaction of interstitial distribution apparently invading from the hemorrhage material at the hilus and not a pyelitis.

No suprarenal gland or other structure was shown. There was no evidence of malignancy.

The diagnosis was massive slow hemorrhage into the fat about the hilus, of undetermined origin.

SUMMARY

The patient was apparently entirely well at the time of the sudden onset.

She had not sustained any known injury recently prior to the acute attack.

The kidney function was normal.

Microscopically, the ureter and pelvis of the left kidney were normal.

The pain in the left half of the abdomen was severe.

A tumor mass was palpable in the left kidney region. It steadily increased in size for about ten days, but there was no evidence of internal hemorrhage.

A hematoma of the kidney bed completely enveloping the left kidney was resected *en masse*.

Microscopically, the origin of the hemorrhage could not be determined and was extracapsular and into the adipose structure of the kidney bed.

It was a spontaneous hemorrhage into the kidney bed.

The patient now, one year after the date of the operation, is well and earning her livelihood.

65 North Madison Avenue.

COLD URTICARIA AND HISTAMINE ALLERGY: REPORT OF A CASE *

L. MINOR BLACKFORD, M.D., ATLANTA, GA.

In the last four years, Thomas Lewis and his associates have done much work on the effect of cold on the human skin. They have proved the unusually high histamine content of the normal skin (1 100,000) and have devised ingenious experiments to show that histamine or a substance like histamine is responsible for the urticarial wheals sometimes produced by cold. In one

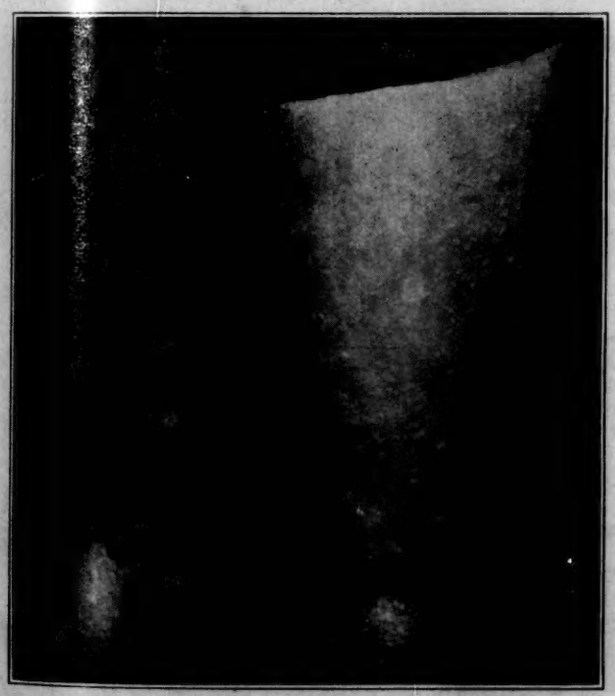

Fig. 1.—Wheals ten minutes after a twenty minute bath at 20 C.

of these papers [1] they reviewed the literature and assembled two small groups. In group 1, urticaria was complicated by transient hemoglobinuria, and syphilis was usually present. The first case was reported in 1879. Hemoglobinuria and syphilis were not present in group 2, the first case of which was reported in 1872. Probably wheals from cold have been observed more often than they have been reported. In 1929, Horton and Brown [2] reported three cases and assembled three more, in which marked systemic histamine-like reactions occurred in allergy due to cold. In five of these six, the reactions developed following swimming. One patient in this series was a boy, aged 15, who had received tetanus antitoxin three years previously. In this case the effect of the injection of histamine on

Fig. 2.—Dermographia from stroking with a fingernail.

the blood pressure was studied. After the administration of 0.1 mg., a change was not observed in blood pressure or pulse rate; but the boy complained that his face felt hot. After 0.3 mg., his systolic blood pressure dropped 9 mm. and his pulse increased from 72 to 92. Hemoglobinuria and syphilis were not present in any of these six cases.

REPORT OF CASE

One cool morning, a boy, aged 17, on leaving a swimming pool was observed on account of the dusky appearance of the lower half of his body. After swimming, he had stood in water above his waist for twenty minutes watching children play. The duskiness extended from the level of the xiphoid process down, and over this area were many irregular (probably from coalescence) wheals. Some of these were only a few millimeters in diameter; others were, perhaps, 2 by 6 cm. Considerable itching and burning developed, both of which were made worse by scratching. The discomfort passed away in half an hour.

The patient was an only child. His mother died apparently as the result of an accident. His stepmother was subject to "hay-fever." His previous illnesses included only measles as a child, and influenza with pneumonia in 1922. In 1926, he had received diphtheria toxin-antitoxin. In 1928, he was pronounced immune to scarlet fever. In 1929, he had been vaccinated against typhoid and smallpox. He considered himself unusually susceptible to poison oak. Following a small nail wound in August, 1929, he was given a large dose of tetanus antitoxin. Four days later he developed a severe generalized rash and was "real sick" for five days. He had been taking a cold bath each morning and was a prominent athlete at his school.

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* Read before the Fulton County Medical Society, Oct. 2, 1930.

1. Harris, K. E.; Lewis, Thomas; and Vaughn, J. M.: Hemoglobinuria and Urticaria from Cold Occurring Singly or in Combination: Observations Referring Especially to the Mechanism of Urticaria, with Some Remarks upon Raynaud's Disease, Heart **14**: 305 (March 24) 1929.

2. Horton, B. T., and Brown, G. E.: Systemic Histamine-Like Reactions in Allergy Due to Cold, Am. J. M. Sc. **178**: 191 (Aug.) 1929.

Physical examination, including ophthalmoscopy, was essentially negative. At the first determination, the systolic blood pressure was 138, the diastolic 86; the boy was obviously excited. Subsequently the systolic blood pressure varied from 114 to 120, and the diastolic from 70 to 84. Hemoglobin was 17.9 Gm. and the red cell count was 6,480,000, both in the upper limits of normal according to Wintrobe and Miller.[3] The differential count was also normal, eosinophils numbering 3 per cent. The Wassermann and Kahn tests and urinalysis were negative.

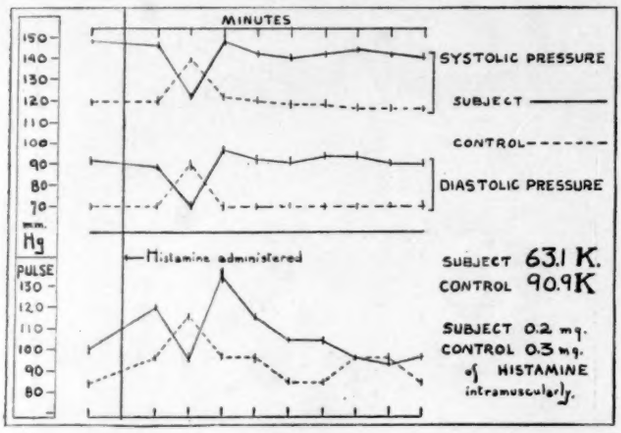


Fig. 3.—The effect of histamine on the pulse and blood pressure of the subject.

Experiment 1. A beaker containing ice water was held on one thigh for about five minutes, and one of the same size containing tap water on the other thigh. The pink area left from the beaker with tap water disappeared in a few seconds; the pink area from the cold beaker lasted more than fifteen minutes and seemed to be slightly elevated, and rather warmer than the surrounding skin. In a few minutes several wheals appeared varying from 4 to 8 mm. in diameter.

Experiment 2. A small block of ice was applied to the thigh for about four minutes. The skin in contact with the ice became markedly blanched and was surrounded by a slightly elevated areola of deep pink. Small wheals appeared in the center.

Experiment 3. Two-tenths milligram of histamine was injected into the subject, and, as a control, 0.3 mg. (proportionate to the greater weight) was injected into a normal man, aged 35. Except for flushing of the face with a sensation of warmth in both persons, symptoms were not experienced. A wheal appeared at the site of injection in each person, larger in the boy. The subject's systolic pressure dropped more than 20 points two minutes after the hypodermic injection (although not below his systolic pressure at subsequent examinations). At the same time the control's systolic pressure went up.

Experiment 4. The front and back of the thorax was stroked with a comb. Dermographia was pronounced. The subject had grown accustomed to the experiments, and the pulse and blood pressure hardly varied over fifteen minutes. The pulse was 88; the systolic blood pressure 118, the diastolic 76. The skin of the thorax was pink; there was no definite flushing of the face or sensation of warmth.

Experiment 5. The subject sat for twenty minutes in a tub of water at 20 C. (68 F.). The day was warm. The skin of the submerged parts became pink, and irregular white blotches gradually appeared. There was slight shivering before he left the tub, which was probably responsible for a moderate rise in blood pressure. In less than five minutes the eruption appeared. There were no general symptoms. Twenty-five minutes after leaving the tub, the blood pressure was 122 systolic and 86 diastolic.

COMMENT

The boy was on a brief visit to Atlanta, and it was therefore impossible to repeat the experiments. Facilities were not available to detect fine changes in the temperature of the skin. The possible etiologic significance of the antitoxin of diphtheria and tetanus is mentioned. There was no history to suggest hemoglobinuria following the urticaria, though actual examination was not done. Lewis and his co-workers, and Horton and Brown were careful to state that reactions in such cases are due to "a substance like histamine or very probably to histamine itself."

3. Wintrobe, M. M., and Miller, M. W.: Normal Blood Determinations in the South, Arch. Int. Med. **43**: 96 (Jan.) 1929.

SUMMARY

A case is presented in which urticarial wheals appeared following prolonged exposure to cold water, and in which the response of the blood pressure to histamine was greater than in the control case.

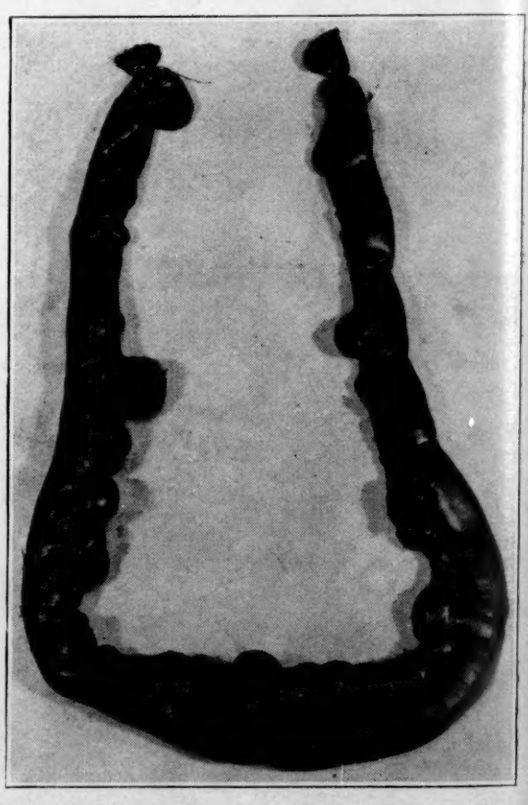
Medical Arts Building.

MULTIPLE DIVERTICULA OF JEJUNUM WITH RESECTION *

JOHN R. BOLING, M.D., TAMPA, FLA.

In March, 1930, I [1] reported, because of its rarity, a case of multiple diverticula of the small intestine. Rothschild,[2] in 1925, collected thirty-three case reports of diverticula of the jejunum, from articles by Balfour, Helvestine,[3] Watson and others. Of this number, nineteen were multiple, and ten of them were not discovered until operation.

The case I reported was of a man, J. C. H., aged 58, who was operated on in November, 1929, for intestinal obstruction. At operation I found in the small intestine an enormous number of diverticula, ranging from the size of a pea to that of a walnut. There was only one of the latter size. It was thought at that time that the involved area was the last part of the jejunum and the first of the ileum. The obstruction was relieved and an enterostomy was done. Since the diverticula did not seem



Section of jejunum, 153 cm. in length, with diverticula.

to be causing any trouble at this time, nothing more was done. The convalescence was smooth, and he left the hospital in good condition. Two months later a gastro-intestinal series was made

* Read before Midland Medical Society, Orlando, Fla., Oct. 8, 1930.

1. Boling, J. R.: Multiple Diverticula of Small Intestine, J. A. M. A. **95**: 267 (July 26) 1930.
2. Rothschild, N. S.: Diverticula of the Jejunum, Ann. Surg. **82**: 250 (Aug.) 1925.
3. Helvestine, F., Jr.: False Diverticula of Jejunum, Surg. Gynec. Obst. **37**: 1 (July) 1923.

with the hope of demonstrating the diverticula. This the roentgenologist failed to do.

Aug. 5, 1930, the patient was again admitted to the hospital, with symptoms of intestinal obstruction. Since his discharge in November, he had been in good health, carrying on the work of a farmer.

His present attack began twelve hours before being admitted to the hospital, with general abdominal pain, nausea and vomiting. He took several purgatives with poor results. When he entered the hospital he was comfortable, the abdomen was flat, and an enema gave fair results, both flatus and feces being passed. The white cell count was 10,800, with 80 per cent polymorphonuclears, hemoglobin was 80 per cent, and the urine was negative. He felt all right for the next thirty-six hours, when he was again seized with severe cramping pain, nausea and vomiting. There was general abdominal tenderness with some rigidity and distention. Enemas gave no results and an operation was decided on, the diagnosis being intestinal obstruction and multiple diverticula of the small intestine.

An incision through the old right rectus scar revealed an obstruction caused by the looping of ileum about the adhesion of the enterostomy. This was freed by dissecting the enterostomy area away from the abdominal wall. The intestine was so distended and difficult to control that a suction tube was inserted into the distended loop and a large amount of gas and liquid material was removed.

Since the patient was in good condition, resection of the diverticula-bearing intestine was decided on. On complete exposure of the involved intestine, it was found that the diverticula began about 1 foot (30.5 cm.) from the ligament of Treitz and continued down for about 60 inches (152 cm.). I was surprised to find the diverticula enormously increased in size since the previous operation. There seemed to be about the same amount of intestine involved, but where before there were three or four small diverticula to a certain space there was now one large one, several small diverticula evidently coalescing to form one large one. Resection of the entire involved intestine was done, an end-to-end anastomosis being made.

He left the table in good condition and reacted well, without any postoperative nausea or vomiting, credit for this being largely due to the use of tribrom-ethyl alcohol as an anesthetic, only 3 ounces (89 cc.) of ether being required.

He has since been entirely free from symptoms and is now back at work.

The section of jejunum was examined by Dr. Herbert Mills, who reported that it measured 153 cm. Scattered along the mesenteric surface either in close proximity or at intervals up to 7.5 cm. apart were fifty-three sessile diverticula, ranging in size from 4 mm. in diameter to 3.5 by 5 cm. in diameter, averaging about 2 cm. The walls of these diverticula were very thin and translucent, the openings of the largest diverticula communicating with the main lumen easily admitting the finger. No other gross pathologic changes were observed.

Microscopic sections showed the mucosa resting on the serosa with no muscular wall between.

I am certain that had roentgenograms been made when the diverticula were large, as at the time of the last operation and in the upright position, as stressed by Dr. J. Case in a letter to me, the diverticula would have readily been seen.

As I stated in my previous article, the causes of diverticula are narrowed down to three, summed up by Sheppe,[4] in 1924, as:

1. Increased abdominal pressure caused by rectal and vesical tenesmus.
2. Atrophy of the inner circular layer of the intestinal musculature.
3. Traction on the intestine by mesenteric vessels shortened by sclerosis and adhesions.

The vast majority are of the false type, as was this one.

The history of attacks of indefinite abdominal pain over a period of several years in an old man was suggestive.

The lack of muscular tone in the intestine probably had to do with the first obstruction; the last was purely a postoperative one.

1208 First National Bank Building.

4. Sheppe, W. M.: False Diverticula of Jejunum, J. A. M. A. 82:1118 (April 5) 1924.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS APPROVED THE FOLLOWING ARTICLE.

H. A. CARTER, Secretary.

DEVICES ALLEGED TO CURE BALDNESS BY MEANS OF ULTRAVIOLET AND INFRA-RED RAYS

W. W. COBLENTZ, PH.D.
WASHINGTON, D. C.

Never has there been such a widespread attempt as today to foist on an unsuspecting and trusting public all sorts of alleged cure-alls to relieve its ills and to keep it in health.

Prominent among these panaceas is the exploitation of ultraviolet and infra-red rays. The mere mention of "infra-red rays" creates in the mind of many persons a feeling that this is something new and mysterious that they have missed, when, as a matter of fact, it is difficult to think of a warm object that does not emit infra-red rays.

When an object is heated to a higher temperature than its surroundings, an excess of infra-red rays passes from it to the surrounding objects. Examples of sources of infra-red rays are arc lamps, incandescent lamps, coal fires, steam pipes, and hot stoves. Because of their low temperature, the infra-red rays emitted by hot water bags and electrical heating pads are of low intensity, and hence they are insignificant in comparison with the amount of heat that is obtained by conduction, by having the hot pad or hot water bottle in contact with the body. Of course it sounds more impressive to speak of infra-red rays than to speak of the application of heat by conduction, by direct contact of the pad with the body.

The trite old saying that a little learning is a dangerous thing seems thoroughly exemplified by the arguments and claims propounded by well meaning salesmen of all sorts of devices offered as cure-alls. Innumerable fallacies are promulgated, especially regarding the penetrating properties of the ultraviolet and the infra-red rays.

It is pathetic and at times ludicrous to hear a promoter of some new device insist that the alleged curative effects are brought about by infra-red rays, when common sense observation (exposure of the hand or face to the device) indicates that practically no infra-red rays are emitted and that the heat that is imparted to the body is obtained by conduction by direct contact of the device with the body. To admit this fact makes the device appear commonplace; but "infra-red rays" sounds more impressive.

A ropelike device containing a heating coil, surrounded with a piece of turkish bath towel, which is to be placed over the gums (i. e., surround the mouth, on the outside), was offered as a cure for pyorrhea. The inventor claimed that the infra-red rays had cured his wife of this disease. The infra-red rays emitted were too small in amount to have any effect and even if emitted they could not penetrate the skin.

Another example of infra-red hokum is a dermal-ray cap for making hair grow. This cap was supposed to cure baldness by infra-red rays—a new discovery. As a matter of fact the few infra-red rays that were emitted were of long wavelength, which cannot penetrate the

skin deeper than a small fraction of a millimeter. As will be described later, the heat is obtained by conduction. Granting that infra-red rays have the power to prevent baldness or restore the hair, then an electrical toaster, which is much hotter and emits more infra-red rays, would be more useful than the cap; but, of course, for a bald-headed man to wear an electrical toaster on top of the head for twenty minutes each day would look undignified; so would an electrical heating pad or a hot brick. Hence, the bald-headed portion of the public, ever ready to try a new thing, will probably try the cap, because it is lined with red silk and is said to emit infra-red rays—which it does, but not in sufficient intensity to be effective. Much more heat is obtained by conduction.

Another bit of hokum is a so-called violet ray lamp, consisting of a spark coil to which is attached a glass tube that terminates in a flattened glass bulb that emits a blue glow when it touches the body. The function of this glass tube is to provide a high resistance to the electric current which comes from the spark coil, so that the patient will not feel the shock too severely. The usefulness of such an induction current in the treatment of some diseases is recognized. But to ascribe the healing to the ultraviolet rays emitted by the glass bulb electrode is misleading; for, even if these rays could pass through the glass walls of the bulb they would be too weak in intensity to be effective for therapeutic purposes. There is nothing mysterious in such a device, which is easily made from an old Ford spark coil and a dry battery. Fortunately, the chain drug stores sell them for $1.39, more or less, and that is not a great loss. But it should not be used as a source of ultraviolet rays, because what few waves are generated are trapped by the glass bulb of the hand electrode.

THE THERMOCAP

The "Thermocap" examined consisted of a cylindric piece of fiber, attached to a bowl-shaped reflector of aluminum which supported an ordinary Edison lamp socket. The radiator or source of violet rays consisted of an 8 candle power, 110 volt, helical carbon filament incandescent lamp in a bulb of blue glass of the ordinary commercial variety used for decorative purposes and consuming about 0.20 ampere on 110 volts, or between 22 and 23 watts.

The lamp was screwed into the socket at the apex of the dome of the cap and did not make contact with the head. The heat was applied to the scalp principally by radiation, and by conduction through the surrounding air. The device was unwieldy, top heavy, and uncomfortable to wear. The blue bulb lamp was used because the yellow and red rays in the clear glass bulb were supposed to inhibit the biologic action in growing hair.

Thermometric Tests.—When the cap was placed on the head, with the room temperature at 22 C. (about 72 F.) but with no current flowing through the lamp, a thermometer placed at a distance of about 1 cm. (one-half inch) above the scalp registered a little above 27 C. (81 F.). When the lamp was in operation, the temperature increased to 57 C. (135 F., at some points, to 58 C., or 138 F.). The temperature of the skin is about 36 C. (96.8 F.). From this, it may be seen that the heat of the lamp can maintain a temperature of about 21 C. (57 — 36) above that of the scalp, while, as noted in the next caption, the blue rays emitted by the lamp can raise the temperature by less than $\frac{1}{5,000}$ degree C.

Radiometric Tests.—The heating effect of the radiation from the lamp was determined by means of a thermopile. Three lamps were tested, all giving closely the same results.

It was found that at a distance of about 4 cm. (1½ inches) from the lamp, which is approximately the distance between the scalp and the lamp, the total radiation from the lamp could raise the temperature of a blackened surface by about 1 to 2 degrees C. On the other hand, the intensity of the violet and ultraviolet radiation emanating from this lamp was found to be less than $\frac{1}{10,000}$ of the total radiation emitted. Hence, the rise in temperature that the violet rays could produce was less than $\frac{2}{10,000}$ ($\frac{1}{5,000}$) degree centigrade.

Spectral transmission measurements were made on a single thickness of one of these lamp bulbs submitted for test, showing a transmission of about 60 per cent in the blue. In other words, if a similar carbon filament were used in a bulb of clear glass instead of blue glass, the intensity of the blue (or shorter) wavelength emitted would be almost double that obtained from the blue lamps employed in the thermocap.

Sunlight Tests.—In contrast with the carbon filament, which emits but little violet radiation (even when the filament is enclosed in a clear glass bulb that permits the rays to come out of the bulb), the sun, owing to its high temperature, emits a large amount of blue and violet radiation.

Measurements were made on the blue rays of June sunlight transmitted through a single thickness of a fragment of the blue bulb lamp belonging to a thermocap. It was found that the amount of blue and violet radiation from the sun that is transmitted through this blue glass bulb is sufficient to raise the temperature of a black absorbing surface by about 0.18 degree C. when placed in direct sunlight. This is equivalent to a rise in temperature of about 0.3 degree C. without the blue glass. In contrast, owing to the low operating temperature of the carbon filament, the violet radiation emitted through the blue glass bulb could raise the temperature only by $\frac{1}{5,000}$ degree.

In other words, the blue rays of full sunlight can produce a heating effect that is from 10,000 to 15,000 times greater than that of the carbon filament lamp. Near a south window, the intensity of the blue rays of the sky would be from 5 to 10 per cent of this value, or from 500 to 1,500 times that of the blue bulb carbon filament lamp. If the blue rays of such a lamp have a biologic effect in stimulating hair growth, then it should be especially useful to bald-headed visitors to amusement houses illuminated with blue lamps.

THE DERMORAY CAP

The "Dermoray Cap" examined consisted of an ordinary black silk skull cap lined with red silk. Between the inner red silk lining and the outside of the cap were several turns of asbestos-covered resistance wire, similar to that used in the ordinary felt-covered electrical heating pads. The device consumed about 0.45 ampere on 110 volts, or about 50 watts. Whether the red silk lining was supposed to increase the effectiveness of the infra-red rays in stimulating hair growth was not disclosed. At any rate it would be suggestive.

The dermoray cap was evidently intended to be worn in contact with the scalp. At any rate it was unavoidably in contact with the scalp. Hence the heat transfer from the cap to the head was almost entirely by conduction and practically nothing by infra-red rays, as claimed.

Thermometric Tests.—The physiologic effect of radiant heat and conducted heat on the skin is to stimulate the nerve endings in the skin, which expands the capillary blood vessels, causing an increase in the blood circulation and erythema.

Accepting this as a basis, I tested the dermoray cap to determine (1) how great a heating effect could be produced on the surface of the skin by the infra-red rays (radiant heat) emitted, and (2) how much heating could be produced by conducted heat.

When the cap was placed on the head, with the room temperature at 22 C. (72 F.) but with no electric current flowing through the heating wires, a thermometer inserted between the scalp and the lining of the cap registered 36 C. (97 F.). When the cap was heated, the temperature increased to 59 C. (139 F.), which was comfortably warm.

Radiometric Tests.—The radiant energy test, made by using a sensitive thermopile of bismuth-silver, showed that (assuming that the cap is not in contact with the scalp) the infra-red rays emitted could raise the temperature of the scalp by less than 0.025 degree C., whereas the conducted heat raised the temperature by more than 23 (59 — 36) degrees C. In other words, the heating by conduction was at least 920 (23 ÷ 0.025) times more effective than that of the infra-red rays.

But, since the cap touches the head, the heat transfer by infra-red rays is reduced proportionately. If two thirds of the area of the cap is in contact with the scalp, the conducted heat is at least 2,760 (920 × 3) times as effective as the infra-red rays.

These tests show that practically all the heat is transferred from the cap to the head by heat conduction and only an insignificant amount of heating is produced by infra-red rays. But even if an appreciable amount of infra-red rays were emitted, it would still remain to be proved that the cap will grow hair. Suppose the inventor had claimed that the heat is transferred from the cap to the head by the more obvious and by the really more effective means, viz., as conducted heat, he still would have to prove that it will grow hair.

2737 Macomb Street.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

PROCAINE BORATE. — 1-amino-benzoyl-2-diethylamino ethanol-penta-*m*-borate; β-diethylaminoethyl-*p*-amino-benzoate penta *m*-borate. $C_6H_4.NH_2COO.C_2H_4.N(C_2H_5)_2.5HBO_2$. — A borate formed by the interaction of *p*-aminobenzoyl-diethylamino-ethanol (procaine base) and boric acid in the same organic solvent. Procaine borate contains 51.8 per cent of *p*-amino-benzoyl-diethylaminoethanol.

Actions and Uses.—Procaine borate closely resembles procaine hydrochloride in its actions and uses. The molecule is heavier than that of procaine hydrochloride, but the toxicity and the anesthetic activity are closely proportional to the procaine base which they contain. When injected subcutaneously, procaine borate exerts a prompt and powerful anesthetic action. It is nonirritant. The testimony concerning its activity when applied to mucous membranes lacks uniformity.

Dosage.—For infiltration anesthesia, solutions of 0.5 to 1 per cent; for blocking nerves, from 1 to 2 per cent; for tonsillectomy, 0.5 to 1 per cent; mucous surfaces, 2 to 20 per cent, dependent on the location and the depth of anesthesia required. Its action is enhanced by the addition of a small amount of epinephrine, as in the case of procaine hydrochloride. Owing to the smaller content of the base in procaine borate, the total dose may exceed that of procaine hydrochloride by about 50 per cent.

Procaine borate occurs as a fine, white, odorless, crystalline powder; when applied to the tongue, it possesses a slightly bitter taste, followed by a sense of numbness; permanent in air; freely soluble in water, about 1 in 4, soluble in alcohol; insoluble in acetone, benzene, chloroform and ether. Its aqueous solution (1 in 10) is alkaline to litmus, dissociating hydrolytically. Procaine borate "melts" at 163 to 166 C.

Transfer about 1 Gm. of procaine borate to a suitable Squibb separatory funnel, add 25 cc. of water, followed by the addition of 5 cc. of normal sodium hydroxide solution and extract with 3 successive portions of chloroform, using 25 cc., 20 cc. and 10 cc., respectively; evaporate the combined chloroformic solutions to dryness, dissolve the oily semisolid base in 25 cc. of a 2 per cent solution of hydrochloric acid: portions of the solution respond to the tests for procaine hydrochloride, U. S. P. X, p. 305. Dissolve 0.1 Gm. of procaine borate in 2 cc. of methyl alcohol, add 5 drops of sulphuric acid and ignite the mixture: a green mantle is imparted to the flame. Dissolve 0.5 Gm. of procaine borate in 50 cc. of water: separate portions of 10 cc. each yield no opalescence with 1 cc. of diluted nitric acid and 1 cc. of silver nitrate solution (*chloride*); no turbidity with 1 cc. of diluted hydrochloric acid and 1 cc. of barium chloride solution (*sulphate*); no coloration or precipitation on saturation with hydrogen sulphide (*salts of heavy metals*). When tested for arsenic according to the U. S. Pharmacopeia X, the product should meet requirements for the arsenic (p. 428, Arsenic Test). Transfer about 0.5 Gm., procaine borate, accurately weighed, to a 50 cc. glass stoppered cylinder, add 25 cc. of chloroform and shake the cylinder and contents for five minutes; allow to stand until the insoluble portion separates; filter, wash the cylinder and the insoluble material onto the filter with two portions of chloroform, using 15 cc. and 10 cc., respectively, adding the washings to the original filtrate; evaporate the combined filtrates to dryness in a tared beaker and dry to constant weight over sulphuric acid in a partially exhausted desiccator: the oily residue should not exceed 2 per cent (*limit of uncombined p-aminobenzoyl-diethylaminoethanol*).

Dry about 1 Gm. of procaine borate, accurately weighed, over sulphuric acid in a partially exhausted desiccator for forty-eight hours: the loss does not exceed 2 per cent. Transfer about 0.4 Gm. of procaine borate, accurately weighed, to a suitable Squibb separatory funnel, add 25 cc. of water, followed by the addition of 2 cc. of normal sodium hydroxide solution, extract with six successive portions of chloroform, using 25 cc., 20 cc., 15 cc., 10 cc., 10 cc. and 10 cc., respectively, evaporate the combined chloroformic solutions to dryness in a stream of warm air, and dry to constant weight over sulphuric acid in a partially exhausted desiccator; dissolve the oily residue in about 10 cc. of previously neutralized alcohol, add 10 cc. of tenth-normal hydrochloric acid solution, followed by the addition of an equal volume of water; determine the excess of acid by titration with fiftieth-normal sodium hydroxide solution, using methyl red as an indicator: the amount of tenth-normal hydrochloric acid solution consumed corresponds to not less than 50.0 per cent nor more than 52.0 per cent, *p*-amino-benzoyl-diethylamino-ethanol, calculated to the dried substance. Transfer about 0.4 Gm. of procaine borate to a steam distillation apparatus and determine the *m*-boric acid according to the Gladding method of distillation and subsequent titration (See Leach, Food Inspection and Analysis, ed. 4, p. 884): the amount of tenth-normal sodium hydroxide solution consumed corresponds to not less than 47.0 per cent nor more than 48.5 per cent, *m*-boric acid (HBO_2), calculated to the dried substance.

Procaine Borate-Searle.—A brand of procaine borate-N. N. R.

Manufactured by G. D. Searle & Co., Chicago. No U. S. patent or trademark.

Ampules Procaine Borate and Epinephrin 1 cc.: Procaine borate-Searle 0.0216 Gm. (⅓ grain) and epinephrine 0.00017 Gm. (1/360 grain) in water to make 1 cc. Each ampule contains more than 1 cc. of solution.

LIVER EXTRACT-FAIRCHILD.—A complete concentrate of an aqueous extraction of fresh edible liver, freed of connective tissue, lipoid, and heat coagulable protein. It is marketed in vials, each containing the material derived from 100 Gm. of the fresh liver.

Action and Uses.—Liver extract-Fairchild is used in the treatment of pernicious anemia.

Dosage.—Liver extract-Fairchild is administered orally, three, four or more vials being given daily until the optimum characteristic effects appear. The content of a vial is placed in a dry glass or cup, about 2 ounces of hot or cold water is added, and the mixture is stirred constantly until dissolved. It may also be administered in various ways with foods.

Manufactured by Fairchild Bros. & Foster, New York. No U. S. patent or trademark.

To prepare liver extract-Fairchild, the fresh edible liver, which has been chilled immediately on taking from the body, is ground finely with about two volumes of water and macerated for several hours at about 25 C.; this is clarified in the usual manner by heating to 80 C. with constant stirring and filtration; the residue on the filter press is repeatedly extracted until the wash water is free of water soluble extractives. The entire liquid thus obtained is concentrated in vacuo to a suitable density and is desiccated in vacuo at a low temperature and powdered. The products of many batches are assembled and mixed with the view of obtaining a product of uniform composition. Representative lots are tested clinically to assure potency.

Liver extract-Fairchild is a yellowish hygroscopic powder, freely soluble in hot or cold water. To an aqueous solution strong alcohol is added until the alcoholic content of the mixture is 80 per cent: a precipitate results.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 14, 1931

DEATH FROM EXPLOSION OF MIXTURE OF ANESTHETIC GASES

It has been two years since, at Evansville, Ind., a tank containing nitrous oxide exploded, killing an anesthetist. The publicity was widespread. Last month a patient died on the operating table in Los Angeles because of the explosion of an anesthetic mixture. Exploitation by the press of such dramatic incidents is natural. Yet the hazard from an explosion of anesthetics, as Henderson [1] has pointed out, is probably less than that of fatally persistent hiccup. At present any death due to explosion receives front page publicity, while a hundred deaths from postoperative pneumonia may not include one mention. Henderson pointedly remarked that surgeons and anesthetists need far more to utilize means to prevent postoperative pneumonia than to worry over the hazard of explosions, except of course explosions due to carelessness.

In the case of the Los Angeles accident, reported elsewhere in this issue,[2] the patient was given nitrous oxide and oxygen, followed by ether. It has been pointed out repeatedly that a mixture of these gases is explosive; in fact, both ether and ethylene are explosive but only in the presence of oxygen or nitrous oxide. Explosions recorded heretofore appear to have been due to sparks from discharges of static electricity developed in the apparatus for administering the anesthetic. Unfortunately, the conditions that produce explosions are not fully understood. Various committees of the American Medical Association, such as the Committee on Anesthesia Accidents [1] and the Committee on Anesthesia Equipment of the Council on Physical Therapy,[3] have drawn up conclusions and recommendations based on available information. Briefly stated, the recommendations of the Committee on Anesthesia Accidents were that the apparatus should be constructed wholly of metal or other material that is a good conductor of electricity, so that it would be incapable of developing or retaining highly localized electrical charges. An equally important measure against sparks or static electricity is to keep the atmosphere of the operating rooms sufficiently moist; a humidity [3] of 55 per cent is sufficient to prevent the development of electrical charges. In the operating room, or wherever inflammable anesthetics are used, there should be strict rules against any open flame or light. The electrical equipment of the operating room and all suction, heating, radiologic diathermy, and other apparatus should be of good construction and should be kept in such good repair that sparks cannot be produced. Particularly important is it that all electrical apparatus should be so enclosed or so protected that anesthetic gases and vapors cannot reach the electrically charged parts, nor will they be in such proximity to the patient as to induce static sparks. Even with all these precautions there will occasionally be an accident, because explosions due to this cause are largely fortuitous and occur even when obvious precautions are taken. In the Los Angeles accident it appears that the use of diathermy was blamed. The pathologist of the hospital in which the accident occurred has recommended in his letter to THE JOURNAL that physicians should be warned not to use diathermy in the presence of explosive gases. Regrettable as is any case of death from explosion of anesthetic gases, explosion is statistically the least of the hazards of anesthesia.

1. Henderson, Yandell: The Hazard of Explosion of Anesthetics, J. A. M. A. **94**: 1491 (May 10) 1930.
2. California News, this issue, page 534.
3. Williams, H. B.: The Explosion Hazard in Anesthesia, J. A. M. A. **94**: 918 (March 29) 1930.

THE STANDARD AND THE PRESUMPTIVE KAHN REACTIONS

The Kahn reaction has become an accepted procedure for the serum diagnosis of syphilis. There was a time when it seemed that no new method could replace the Wassermann test. About five years ago the Wassermann test was replaced by the Kahn test in the laboratories of the United States Navy and of the Michigan Department of Health. Since that time the Kahn test has replaced the Wassermann in numerous other laboratories and has attained wide use throughout the world as a standard method either with or without the use of the Wassermann test. The superiority of the Kahn test over different Wassermann technics as well as other precipitation tests is shown by an analysis of the results obtained at the competitive serologic conference of the League of Nations Health Committee held at Copenhagen in 1928.[1] At that conference seven Wassermann methods and seven precipitation tests, including the Kahn, were put to a practical trial in the examination of approximately 1,000 serums, half of which were from syphilitic patients. The Kahn test was one of a group of four methods that did not give positive reactions in the nonsyphilitic cases, and it was more sensitive than the other three to the extent of 20, 45 and 55 per cent, respectively. Among the remaining ten methods that gave varying numbers of

1. Report of the Second Laboratory Conference on the Serodiagnosis of Syphilis, Geneva, League of Nations Health Organization, 1928.

positive reactions in nonsyphilitic cases, one, developed by Prof. Rudolf Müller[2] of Vienna, exceeded the Kahn in sensitiveness by about 4 per cent. But this method, owing to its impracticability, has since been displaced by Müller in favor of a more recently developed technic.[3] The Kahn reaction was thus not only free from false positive results but remarkable for its sensitiveness.

Lately, interest has been directed to the presumptive Kahn test.[4] This test was developed by Kahn as an auxiliary method to the standard or regular Kahn test, the difference between the two methods being that the presumptive is more sensitive than the regular test. This increased sensitiveness is due to the fact that in the presumptive test "sensitized" Kahn antigen is employed, which possesses a greater degree of sensitiveness than "standard" antigen, used in the regular test. Owing to the possible danger in employing an oversensitive method for the serum diagnosis of syphilis, Kahn believed it best, until the true value of the test is determined, to consider the results presumptive in character. The main functions of the presumptive test are to serve as a technical check on the regular Kahn test and especially as a check on weak and borderline reactions given by that test. The presumptive test being more sensitive, it should give strongly positive reactions whenever the regular test gives borderline reactions. Negative reactions with the presumptive test have greater diagnostic value in eliminating the likelihood of syphilitic infection than similar reactions with the regular test. Positive reactions with the presumptive test aid in establishing a diagnosis of syphilis in isolated cases wherein the regular Kahn test is negative.

McDermott[5] recently reported on the comparative sensitiveness of the regular and the presumptive Kahn tests based on 15,000 examinations. This worker found the presumptive test to be 26 per cent more sensitive than the regular Kahn test in treated cases of syphilis and 2.5 per cent more sensitive in routine admissions in the University of Michigan Hospital. In spinal fluid tests based on 1,358 examinations, the same worker[6] found the presumptive Kahn test to be 18 per cent more sensitive than the regular Kahn test in treated cases of neurosyphilis and 12 per cent more sensitive in routine admissions. The studies of Davenport[7] are of especial interest in this connection. This worker found the Kahn test for spinal fluid to be free from false positive reactions but to miss an occasional case of neurosyphilis. Of 118 spinal fluid examinations on patients who presented themselves for diagnosis, the Kahn test was negative in two cases of neurosyphilis and in three cases of questionable neurosyphilis. Of 369 spinal fluid examinations in treated cases of syphilis, 23 negative Kahn reactions were obtained on the same number of patients who required further central nervous system therapy. The conditions are reversed, however, when the results this worker obtained are compared with the presumptive spinal fluid test. Of 115 examinations on patients who presented themselves for diagnosis, the presumptive Kahn test was positive in 14 patients in various stages of syphilis who showed insufficient clinical evidence of neurosyphilis. One patient with clinical evidence of neurosyphilis, whose spinal fluid gave completely negative serologic results with the colloidal gold, mastic and globulin reactions, and with a cell count of 7, reacted negatively also with the presumptive Kahn test. Turning to treated cases of neurosyphilis, of 359 spinal fluid examinations, 30 were positive in patients in whom no further therapy directed to the central nervous system was indicated. In three patients whose spinal fluids gave negative presumptive reactions, it was deemed advisable to continue central nervous system therapy as a factor of safety; these patients were at work and appeared normal.

Evidently, therefore, the presumptive spinal fluid test is extremely sensitive in detecting changes in the central nervous system due to syphilitic infection. As Davenport points out, his study is too limited to establish that a positive presumptive test on spinal fluid is a diagnostic criterion for neurosyphilis. Meanwhile the method should serve as a stimulus to clinicians to search for evidence of neurosyphilis when the reaction is positive and should play an important part in helping to eliminate neurosyphilis when the reaction is negative.

2. Page 133 of the report.
3. Müller, Rudolf: Deutsche med. Wchnschr. **55**: 1624 (Sept. 27) 1929.
4. Kahn, R. L.: The Kahn Test, Baltimore, Williams and Wilkins Company, 1928, p. 141.
5. McDermott, Elizabeth B.: The Presumptive Kahn Procedure in Syphilis Based on 15,000 Examinations, Arch. Path. **8**: 661 (Oct.) 1929.
6. McDermott, Elizabeth B.: The Kahn Presumptive Procedure with Spiral Fluids, Arch. Neurol. & Psychiat. **23**: 531 (March) 1930.
7. Davenport, K. M.: Am. J. Syph. **8**: 570, 575 (Oct.) 1929.

PHYSIOLOGIC MANIFESTATIONS OF SLEEP

Many textbooks of physiology contain little or no mention of sleep. They may refer to the general manifestations of this state and attach a series of hygienic comments to their descriptions; but theories as to the genesis of sleep are for the most part cautiously avoided. Sleep therefore remains among the riddles of physiology. There are chemical theories that make sleep the result of the action of substances generated during the waking hours and having a soporific effect on the brain. Such conceptions rest on doubtful foundations and are not generally accepted. This is true likewise of the histologic or biophysical theories. These postulate[1] that in the waking state the neighboring nerve units are in contact with each other; transmission of nerve impulses from neuron to neuron is then possible and the result is consciousness. During sleep, on the other hand, the dendrites

1. Halliburton, W. D., and McDowall, R. J. S.: Handbook of Physiology, Philadelphia, P. Blakiston's Son & Co., 1929.

are assumed to be retracted in an ameboid manner; the neurons are therefore separated, and the result is unconsciousness.

More intriguing are the so-called anemia theories of sleep.[2] They suggest that the alternation between sleeping and waking may be connected with a rhythmic variation in the blood supply to the cerebral cortex. Sleep, with its diminished flow of blood through the brain, is thus represented as a condition of cerebral anemia. Howell, among others, has believed that this follows dilatation of the blood vessels of the skin, such dilatation being due to vasomotor fatigue. Diminished metabolism also has been brought into the category of explanations of sleep. One writer[3] argues that it need not be surprising to find that the frequency of the heart, as well as that of respiration, retains during this period a value only about three fourths of normal. For the same reason, the blood pressure assumes at this time a level considerably below its usual one. These effects have been made use of repeatedly in explaining the phenomenon of sleep, it being held that the cells composing the higher centers enter this state of depressed function in consequence of a diminution in their blood supply. Thus, he adds, it is believed that the volume of the brain decreases during sleep, because a portion of the blood ordinarily allotted to this organ is temporarily diverted into the portal and cutaneous circuits.

The recent careful investigations of Grollman[4] at Johns Hopkins University seem to upset many of the current assumptions. He has observed that the decreases in cardiac output, blood pressure and oxygen consumption during sleep are of the same order of magnitude and such as would be expected to occur in complete rest. This fact, Grollman avers, renders improbable the view that sleep is attended by any marked vasomotor changes, redistribution of blood, cerebral anemia, or splanchnic congestion as held by earlier workers. It is worthy of emphasis that these experiments, like those of Hill and Pieron, refute the idea that the blood pressure is lower during sleep than when the subject is awake. That is, there is no specific change in the blood pressure that is associated with the sleeping state, but the observed values occur irrespective of whether the subject is asleep or awake, so long as he is completely at rest. Furthermore, the sleeping state is not characterized by any peculiar diminution in the metabolism as compared to the waking state at the same hour of the night. The oxygen consumption decreases rapidly in the early hours of the night to a minimum early in the morning, which is about 10 per cent lower than the basal value as observed in the morning after awakening. If the cardiovascular and metabolic functions are excluded from the causation of the somnolent state, and changes in them are merely incidents in the physiologic cycles, other causes of sleep must be discovered. This paves the way for considerations of sleep as a process of inhibition, such as Pavlov has championed.

2. Howell, W. H.: Textbook of Physiology, Philadelphia, W. B. Saunders Company, 1927.
3. Burton-Opitz, Russell: An Elementary Manual of Physiology, Philadelphia, W. B. Saunders Company, 1922.
4. Grollman, A.: Physiological Variations in the Cardiac Output of Man: XI. The Pulse Rate, Blood Pressure, Oxygen Consumption, Arteriovenous Oxygen Difference, and Cardiac Output of Man During Normal Nocturnal Sleep, Am. J. Physiol. **95**: 274 (Nov.) 1930.

IODIZED MILK

The current enthusiasm for child welfare, with all that it implies for prenatal care and for growth, development and maternal care, was reflected in the recent White House Conference on Child Health and Protection. The number of health items that arouse concern seems to be growing with the years. Child psychology has of late acquired an enormous impetus. In the domain of bodily health, preventive medicine is forging ahead rapidly. There are "well baby clinics" that vie with "sick baby clinics." Vaccination against smallpox and immunization against diphtheria are becoming routine measures in well managed communities. Dental hygiene has placed specialists at the call of the schools. To these features may be added a widespread concern about the proper development of the thyroid gland and the attempts to avert adolescent goiter. The extensive occurrence of such thyroid abnormality in this country has become familiar. Details have repeatedly been rehearsed in THE JOURNAL.

The goiter regions of the United States are characterized as a rule by a smaller content of iodine in the vegetation and local edible foods. Analyses of drinking water obtained from nongoitrous regions show higher iodine values than those obtained from regions where goiter is prevalent.[1] The association of endemic goiter with a lack of iodine was reported in 1921 by Marine and Kimball.[2] As is now well known, the commonest prophylactic measures have involved the periodic administration of therapeutic doses of iodide or other iodine-bearing compounds to school children. Other measures have consisted in the addition of inorganic iodides to the drinking water supply and to table salt.

It is now an established fact, as Krauss and Monroe[3] have recently remarked, that the iodine content of milk can be materially increased by feeding cows some source of inorganic iodine, such as potassium iodide, or some source of organic iodine, such as kelp. Considerable milk containing more than a normal amount of iodine is probably being produced through the feeding of iodized mineral mixtures and commercial preparations made up of substances that contain iodine. It is also well known that the iodine content of milk may vary from a trace to several parts per million, depending on regional influences. Supplee[4] has made analytic

1. McClendon, J. F.: Inverse Relation Between Iodine in Food and Drink and Goiter, Simple and Exophthalmic, J. A. M. A. **82**: 1669 (May 24) 1924.
2. Marine, David; and Kimball, O. P.: The Prevention of Simple Goiter in Man, J. A. M. A. **77**: 1068 (Oct. 1) 1921.
3. Krauss, W. E., and Monroe, C. F.: A Comparison of the Influence of Iodized Milk and of Potassium Iodide Administered Directly on the Size and Iodine Content of the Thyroid Gland of Rats, J. Biol. Chem. **89**: 581 (Dec.) 1930.
4. Supplee, G. C.: Seasonal Variations in Certain Inorganic Constituents of Dry Milk Produced in New York and Wisconsin, J. Dairy Sc. **13**: 522 (Nov.) 1930.

comparisons of the iodine content of representative dry milk powders prepared every month of the year from milks produced in Wisconsin and New York, respectively. The outcome was perhaps somewhat unexpected. The powder from the New York territory, summer production, contained 145 parts of iodine per billion; the winter production from the same territory contained 67 parts per billion. The powder from the Wisconsin territory, summer production, contained 704 parts of iodine per billion; the winter production from the same territory contained 961 parts per billion.

The experimental studies of Krauss and Monroe at the Ohio Agricultural Experiment Station in Wooster leave little doubt that "naturally iodized" milk can exert an influence in goiter prophylaxis. In tests on susceptible animals, iodized milk, secured by feeding 0.1 Gm. of potassium iodide daily to cows, was compared with normal milk and with normal milk plus different amounts of potassium iodide. Prophylactic and curative methods were employed. In general, smaller thyroid glands containing a greater percentage of iodine resulted whenever iodized milk or potassium iodide was fed than when "normal" milk of the region was used.

The Ohio biochemists remark that iodizing the general milk supply would insure a constant source of iodine to all persons using milk. It would automatically treat a great many individuals who either through ignorance or lack of funds have had no knowledge of a thyroid deficiency. It would serve as a prophylactic, particularly in young growing children, when an iodine deficiency has not manifested itself in any symptom ordinarily used in diagnosis. Furthermore, the iodine would be furnished in a stable, convenient and pleasant form. On the other hand, they add, in cases in which a constant supply of iodine would be irritating rather than beneficial, some source of ordinary or noniodized milk would need to be available. It is true that putting iodine into milk through the cow is rather wasteful, as only from 10 to 15 per cent of the iodine fed appears in the milk; but by such a procedure the cow also is benefited. Recent studies by Hanzlik and his associates [5] and of Mendel and Vickery [6] make it seem unlikely that normal growth will be interfered with by the continued administration of iodide in small daily doses. Nevertheless there is a widespread belief that adolescents as well as adults should not be subjected indiscriminately to a surplus of iodine in all sorts of ingested foods, condiments and drink. Goiter prophylaxis ought to be placed on a quantitative dosage basis. Milk doubtless can be made useful in such endeavors, as can other food products. The mode of preference should be left to the physician, however, and not to the food propagandist.

5. Hanzlik, P. J.; Talbot, E. P., and Gibson, E. E.: Continued Administration of Iodide and Other Salts, Arch. Int. Med. 42: 579 (Oct.) 1928.

6. Mendel, L. B., and Vickery, H. B.: Effect of Continued Administration of Iodide on the Growth of the Albino Rat, Proc. Soc. Exper. Biol. & Med. 27: 806 (May) 1930.

Current Comment

HOUSE COMMITTEE REPORTS ON FEDERAL AID FOR MATERNAL HYGIENE

The Committee on Interstate and Foreign Commerce of the House of Representatives has recommended that the bill passed by the Senate (S. 255) to authorize federal subsidies for the promotion of intrastate activities in the fields of maternal and infant hygiene, under the supervision and control of the federal government, be amended to provide federal subsidies for the promotion of intrastate rural hygiene also, under similar supervision and control, and be then enacted. The bill as thus amended has the endorsement of the Secretary of the Interior and of the Secretary of Labor, and the qualified endorsement of the Secretary of the Treasury. It is commonly understood to have the tacit endorsement of the President. The report of the committee, however, does not contain evidence to show that former legislation of this type in the field of maternal and infant hygiene accelerated the decline of infant and maternal death rates, after seven years' effort and eleven million dollars' expense. The report does not provide evidence to show that there is greater need for federal aid in the promotion of health in rural areas, which it is proposed to benefit by this bill, than in urban areas, which the bill ignores. Probably the committee found no such evidence. In view of the strong disapproval by the administration of federal financial aid, even temporarily, to the people of certain states now in dire distress, it is difficult to comprehend the reasoning by which the administration approves continuing permanent federal aid of the character proposed by this bill. THE JOURNAL must continue to protest against the subordination of the constitutional rights of the states to federal control and the promotion of the growth of the federal bureaucracy.

STATISTICS ON CANCER

The British government, about ten years ago, had a quantity of radium available, which was entrusted to the Medical Research Council of England to be used in the treatment of cancer. The council lent this radium to institutions located at centers of population where a general hospital and a university medical school worked in conjunction with the investigators of radium. The council has recently published a report [1] of the results obtained from eleven such institutions. It shows that only a small number of cases of carcinoma were treated during the first five years of the survey. Recently the number of patients treated has increased considerably. It is too soon, however, to draw any conclusions as to the final results. The report brings out one promising feature in the treatment of cancer. Radium was used in the treatment of carcinomas of the breast in a relatively small series. In a fifth of the cases, pronounced inoperable by surgeons, the patients were alive without apparent signs of disease two or three years after treatment. Somewhat similar results were

1. Medical Uses of Radium, Special Report Series number 150, Medical Research Council, London, 1930.

reported with inoperable carcinoma of the cervix, although none of the patients treated more than five years previously were alive. This would indicate that physicians may consider treatment by radium or x-rays of any inoperable case, no matter how hopeless the possibilities may seem. In a few years England will have excellent statistics on the treatment of cancer by radium. A national organization might undertake and enlarge on a similar plan in this country. Such control is needed especially because lenders of radium for commercial purposes now urge its use in unsuitable cases by men not specially trained in its application. There is apparently no correlation of results of treatment of cancer by radium in the various parts of our country. Physicians must rely on reports in the literature, which are frequently contradictory. A yearly national report should be made, as is done in England. It could be enlarged to include the final results of all cases of cancer, whether treated by radium, x-rays or surgery. If all the medical centers were included in this survey, it would be only a few years until some impartial figures of considerable proportions would be available indicating the prognosis and the best treatment for the various types of cancer.

Association News

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing memorial in Paris brings the total to $1,544.60. The list of those who have contributed during the current week follows:

James S. Brummette, M.D., Major, M. C., U. S. Army, Nogales, Ariz.
Samuel K. Levy, M.D., Brooklyn
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Michael A. Desmond, M.D., Santa Monica, Calif.
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Ellen A. Stone, M.D., Providence, R. I.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10:45 on Tuesday, 10:45 on Thursday and 10 o'clock on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

February 16. Another "Itis"—Sinusitis.
February 17. Worn Out Filters.
February 19. Your Child's Eyes.
February 21. It May Be Your Teeth.

Five Minute Health Talks may be heard over the Columbia Broadcasting System daily except Sundays and Holidays from 12 to 12:05 p. m.

The program for the week is as follows:

February 16. The First Week.
February 17. Sititis.
February 18. Too Much Coddling.
February 19. Why People Get Sick.
February 20. The Art of Accepting Affliction.
February 21. Food Habits for Children.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bill Introduced.—S. 37 proposes to require all applicants for licenses to practice any form of the healing art to pass examinations in anatomy, physiology, chemistry, bacteriology, pathology and hygiene, given by a board of examiners in the basic sciences, prior to being permitted to present themselves for examination before their respective professional or cult licensing boards.

CALIFORNIA

Bills Introduced.—A. 1501 proposes to amend the definition of the practice of dentistry so as to prohibit a licensed physician from practicing oral surgery. A. 1502 proposes to amend the procedure to be followed in revoking or suspending licenses to practice dentistry. A. 1503 proposes to designate the following practices "unprofessional conduct" and as such, sufficient cause for the revocation of licenses to practice dentistry: (1) aiding or abetting any unlicensed individual to practice dentistry unlawfully and (2) practicing or advertising under a false, assumed or fictitious name either as an individual, firm or corporation. A. 1504 proposes to make it a misdemeanor for any person to practice, or to advertise or in any other manner indicate that he is practicing or will practice dentistry, under a false, assumed or fictitious name.

Report of Tropical Disease Clinic.—The Institute of Tropical Medicine of the University of California, San Francisco, gave 445 treatments to eighty-three patients in its first year of service. According to Dr. Alfred C. Reed, director, in a report for the period from Sept. 1, 1929, to Sept. 1, 1930, thirty Americans, eighteen Filipinos, nine Mexicans, eight South Americans and Central Americans, and eighteen others of miscellaneous nationalities received an average of more than five treatments each. Among the diseases found were leprosy, pellagra, granuloma inguinale, elephantiasis, dysenteries, intestinal parasites and malaria. The number of patients referred to the University Hospital has increased each month since the establishment of the institute, it is said, and, in some cases, patients are referred back to their physicians with full reports and recommendations for treatment. Patients able to pay a fee are referred to physicians who specialize in this kind of work, but the institute cares for indigent patients. Out-of-town patients must be prepared to pay for lodging outside the hospital, as the clinic has no facilities for patients who are not confined to bed.

Death from Explosion of Mixture of Anesthetic Gases.—In a laparotomy in a Los Angeles hospital, a woman, aged 43, was given nitrous oxide and oxygen. After incision was made in the abdominal wall, because the depth of the anesthesia was not sufficient, ether was added to the mixture. A few moments later an explosion occurred. A request for information by THE JOURNAL elicited the fact that the explosion was confined apparently to the mixed gases in the anesthetic mask and in the lungs. Immediately after the explosion the patient stopped breathing and could not be resuscitated. The explosion lifted the mask about an inch or more from the face. There was a slightly charred or burned area on the chin. At necropsy, innumerable variously sized hemorrhagic areas due to rupture of alveoli and bronchioles were found in the lungs; also four small holes about one-fourth inch in diameter were found passing through the visceral pleura on the inner border of the left lung. While the cause of the explosion is not definite, it appears that diathermy was applied during the operation. As all other sources of sparks had been eliminated, according to the report sent to THE JOURNAL, it would seem that the elec-

trostatic field, developed in and on the patient by these high frequency currents, may have been the primary cause. A tiny spark probably jumped from some individual near the patient or from shifting or slightly raising the mask, thus igniting the explosive mixture of gases.

COLORADO

Bill Introduced.—H. 266 proposes to amend the state prohibition law to conform with the Volstead Act with respect to the amount and frequency of a physician's prescribing of liquor.

Society News.—Dr. Tom R. Knowles, Colorado Springs, was elected president of the Arkansas Valley Medical Association, January 10, succeeding Dr. Lanning E. Likes of Lamar. Among the speakers on the program were Drs. Alfred H. Washburn, Denver, and Lewis J. Moorman, Oklahoma City, whose subjects were "Prevention of Heart Disorders in Early Life" and "Simultaneous Bilateral Collapse in Treatment of Tuberculosis," respectively.——Dr. Burton B. Grover addressed the El Paso County Medical Society, Colorado Springs, February 11, on "Electrosurgery"; Dr. Arthur J. Markley, Denver, presented a report of the International Dermatological Congress in Copenhagen.

CONNECTICUT

Bill Introduced.—H. 111 proposes (1) to repeal that provision of the medical practice act which exempts applicants who graduated from medical colleges prior to Jan. 1, 1919, or who were eligible to examination before that date, from the requirement of having had, prior to beginning the study of medicine, nine months' work in chemistry, physics and general biology, and (2) to eliminate the fee of $15 for approving the credentials of an applicant for a license by reciprocity.

ILLINOIS

Society News.—Dr. Ralph C. Hamill, Chicago, addressed the Champaign County Medical Society, February 12, on prevention of nervous disorders.——Dr. Julius H. Hess, Chicago, will address the Rock Island County Medical Society, February 15, on "Focal Infections of Childhood."——Dr. James H. Hutton, Chicago, addressed the Vermilion County Medical Society, Danville, February 3, on "Endocrine Disorders Occurring in General Medicine," and the DeWitt County Medical Society, Clinton, February 11, on "Diagnosis and Treatment of Common Endocrine Disorders."

Chicago

Institute for Hospital Boards.—An institute for lay boards of hospitals and public health nursing organizations will be held in Chicago, February 17, under the auspices of the Central Council for Nursing Education, concurrently with the annual congress on medical education, licensure and hospitals. Among the speakers will be Carl E. Buck, D.P.H., Detroit, on "Responsibility of the Citizen for Community Health"; Dr. Henry S. Houghton, Iowa City, "The State University and Nursing Education"; Miss Isabel Stewart, of Columbia University, New York, on "The Present Trend in Nursing Education," and Miss Adda Eldredge, Madison, Wis., "Relation of the School of Nursing to the Board of Directors." At a dinner given jointly with the Council on Medical Education and Hospitals of the American Medical Association, Monday evening, February 16, Dr. Henry A. Christian, Boston, will speak on "The Clinic as a Center of Graduate Study."

Society News.—Dr. Vilray P. Blair, St. Louis, will deliver the seventh Lewis-Linn-McArthur lecture of the Billings Foundation of the Institute of Medicine of Chicago before the institute and the Chicago Surgical Society, February 27, on "Facial Abnormalities, Fancied and Real; the Reaction of the Patient, and Their Attempted Correction."——Dr. George Milles, among others, addressed the Chicago Pathological Society, February 9, on "Primary Carcinoma of the Jejunum."——A. McCrea, Ph.D., Detroit, addressed the Chicago Council of Medical Women, February 6, on "Parasitic Fungi of the Skin," and Rosalie M. Parr, Ph.D., "Effects of Germanium and Selenium Compounds on Blood Morphology."——The Society of Medical History of Chicago will be addressed, February 20, at the Archibald Church Library, Northwestern University, 303 East Chicago Avenue, by Dr. M. Herbert Barker on "Richard Bright and His Contribution to Renal Pathology"; J. Barry Anson, Ph.D., "Thomas Willis and His Contribution to Anatomy," and Dr. Irving S. Cutter, "A Brief Description of Some Source Items in the Church Library."——The annual conference of the Chicago Association for Child Study and Parent Education will be held at the Palmer House, March 28. The tentative program includes papers by Dr. Lawson G. Lowrey, director, Institute for Child Guidance, New York, on "Some Emotional Difficulties in Marital Adjustment Related to Early Parental Patterns"; Dr. Bernard Glueck, New York, "Some of the Sources of Marital Discontent"; Phyllis Blanchard, Ph.D., of the Philadelphia Child Guidance Clinic, "Personality Problems in Marriage and Parenthood," and Floyd Dell, author, "The Family and the Machine Age."——In a symposium on urinary lesions held by the Chicago Roentgen Society, February 11, speakers were Drs. Bernard H. Nichols, Cleveland, on iopax; Herman L. Kretschmer, pyelography, and Ursus V. Portmann, Cleveland, "Irradiation Treatment of Malignant Urinary Lesions."——Dr. Bowman C. Crowell presented a paper on differential diagnosis of giant cell tumor before the Chicago Orthopedic Club, February 13.——Dr. Clark W. Finnerud, among others, will address the Chicago Ophthalmological Society, February 16, on "Skin Diseases of the Eyelids."——Dr. William L. Beecher will speak on "Hyperesthetic Rhinitis and Asthma Due to Digestive Ferments" before the Chicago Society of Allergy, February 16.——A symposium on sterility will be conducted before a joint meeting of the Chicago Gynecological and Urological societies, February 26.——Dr. Rudolf Schönheimer, director, Biochemical Laboratory of the Pathological Institute, University of Freiburg, Germany, addressed the Medical Research Club of the University of Illinois, January 28, on "Recent Advances in Our Knowledge of Cholesterol Metabolism."

INDIANA

Bills Introduced.—S. 96 proposes to require the annual registration of registered nurses and trained attendants and the payment of an annual fee of $1 and of 50 cents, respectively. H. 32 proposes to grant financial aid to any county, or to any two or more counties which may hereafter establish and maintain a hospital for the care and treatment of persons suffering from tuberculosis; or to any county which does not maintain such hospital but which contracts with another county for the care and treatment of such persons. H. 246 proposes to provide that in every city of 3,000 or more population the board of health make medical inspections from time to time of all persons attending or employed in public, private and parochial schools. H. 304 proposes to authorize a court or jury to order the sexual sterilization of any person convicted of murder, burglary, robbery, banditry, arson, rape, or the commission of any other felony in which life is threatened.

IOWA

Bills Introduced.—S. 56 proposes to amend the law with respect to coroners by allowing a coroner, if he is a licensed physician, to perform autopsies. H. 31 proposes to define podiatrists as "persons who publically profess to be podiatrists or who publically profess to assume the duties incident to the practice of podiatry or who publically profess to treat ailments of the human foot; persons who diagnose or give medical or surgical treatment to ailments of the human foot."

Society News.—Among speakers at the meeting of the Sioux Valley Medical Society, Sioux City, January 20-21, were Drs. Raphael Isaacs, Ann Arbor, Mich., on "Different Types of Anemia: Diagnosis and Treatment"; Sumner L. Koch, Chicago, "Acquired Contractures of the Hand"; William W. Duke, Kansas City, allergy; W. McKim Marriott, St. Louis, care and feeding of infants and children; Edward C. Rosenow, Rochester, Minn., focal infection; Frederick A. Willius, Rochester, Minn., treatment of heart failure; Frederic E. B. Foley, Minneapolis, surgical treatment of hydronephrosis, and Ralph M. Waters, Madison, Wis., oxygen and carbon dioxide variations accompanying the relief of pain.

KANSAS

Bills Introduced.—H. 26, to amend that section of the workmen's compensation act stating the amount for which an employer will be liable for medical attention rendered an injured employee, proposes that such liability shall extend to such medical, surgical or other attendance or treatment, nursing or hospital service, medicine, crutches and apparatus as may be necessary during sixty days after the injury or for such time as the industrial commission may order. An employee, or another in his behalf, may obtain emergency treatment at the expense of the employer. H. 287 proposes that the provisions of the narcotic act shall not apply to decocainized coca leaves or preparations made therefrom or to other preparations of coca leaves which do not contain cocaine.

Society News.—The Allen County Medical Society devoted a recent meeting to a discussion of poliomyelitis; among the speakers were Drs. Rexford L. Diveley and Frank C. Neff, Kansas City, and Clarence H. Kinnaman of the state board of health, Topeka. —— Dr. Arthur E. Strauss, St. Louis, addressed the annual meeting of the Shawnee County Medical Society, Dec. 1, 1930, on myocarditis. —— The Kansas City Southwest Clinical Society held its monthly clinic, January 13, at Research Hospital; Dr. William T. Coughlin, St. Louis, spoke on "Diagnosis and Treatment of the Acute Abdomen"; he also addressed a joint meeting of the Jackson and Wyandotte county medical societies on sympathectomy in arthritis. ——Plans for a year's investigation in high blood pressure have been announced by the University of Kansas School of Medicine. Dr. John B. Nanninga will carry on the research, which is financed partly by a grant of $1,000 from the National Research Council.——Drs. Earl C. Padgett and Leroy A. Calkins addressed the Wyandotte County Medical Society, January 6, on "Relative Position of Radium and Surgery in Cancer of the Face, Mouth and Jaws" and "Use of Radium in Gynecology," respectively. The society was addressed, February 3, by Drs. Fred E. Angle, Kansas City, and Joseph E. Welker, Kansas City, Mo., on "Treatment of Acute Cardiac Embarrassment Without Edema" and "Treatment of the Cardiac Patient with Edema," respectively.——Dr. George C. Lee, Kansas City, Mo., addressed the Bourbon County Medical Society, Dec. 15, 1930, on "Disorders of the Heart." —— Dr. Carl F. Nelson, Lawrence, addressed the Sumner County Medical Society, Dec. 18, 1930, Wellington, on "Causes, Effects and Treatment of Acute and Chronic Oxygen Want," and Dr. Ira H. Dillon, Wellington, "Conservatism in the Treatment of Nasal Accessory Sinus Infections."

MAINE

Bill Introduced. — S. 153 proposes to permit cities and towns to appropriate money to be expended in the city or town where appropriated, under the direction of the state department of health, for dental hygienist service.

MARYLAND

Professors Welch and Howell to Retire.—Dr. William H. Welch, professor of the history of medicine, and Dr. William H. Howell, professor of physiology and director of the School of Hygiene and Public Health, Johns Hopkins University, will retire in June. Dr. Welch, who will be 81 in April, was the first professor of pathology at Johns Hopkins University School of Medicine, having served in that capacity from 1884 until 1916, when he became the first director of the School of Hygiene and Public Health. In 1926 he resigned that position to accept the newly created chair of the history of medicine. The new medical library at Johns Hopkins dedicated in 1929 is named for him. Dr. Welch's eightieth birthday was marked by an international celebration. Dr. Howell, who will be 71 this month, has been professor of physiology since 1893; in 1926 he succeeded Dr. Welch as director of the School of Public Health and Hygiene. He is the author of a textbook on physiology and was president of the International Physiological Congress in 1929 when it met in Boston. Dr. Welch was the guest of honor at a dinner at the Maryland Club, Baltimore, January 28, at which Dr. Howell presented to him a volume bearing congratulatory messages from friends. John D. Rockefeller, Jr., also presented a volume recounting the eightieth birthday celebration.

MASSACHUSETTS

Bills Introduced.—S. 222 proposes to regulate the practices of hair dressers, cosmetologists and electrologists. A cosmetologist would be permitted to remove superfluous hair, warts and moles from the body of any female by the use of electricity or otherwise and a electrologist would be permitted to remove superfluous hair, warts or moles from the body of any person by use of electricity. H. 265 proposes to extend the provisions of the vaccination law to private schools.

District Society Celebrates Ninetieth Anniversary.—The Essex North District Medical Society celebrated the ninetieth anniversary of its founding at a meeting, January 7, at the Groveland Congregational Church, where the first meetings were held in 1841. Dr. Frank W. Snow, Newburyport, outlined the history of medicine in the district and the formation of the society. In eighty-seven years there have been only four secretaries of the society. Drs. Francis W. Anthony, Haverhill, and J. Forrest Burnham, Lawrence, read other historical papers. Miss Helen King Spofford, granddaughter of Dr. Jeremiah Spofford, one of the founders, exhibited for the society a collection of her grandfather's old medical instruments, books and documents. Other antique articles were shown, including a string of sleigh bells tuned so that citizens might recognize the doctor's approach.

MINNESOTA

Bills Introduced.—H. 300 proposes to regulate the practice of naturopathy. A proposed board of naturopathic examiners would be authorized to issue certificates to all present naturopathic practitioners, which would entitle the holders to certificates of registration in the basic sciences without examination. Thereafter all naturopathic applicants, however, would be examined in the basic sciences. Naturopathy is said to be "non-medical and drugless and is defined as the science and art of nature cure, or of naturopathy, its science being the use of such natural, corrective, vital and purifying therapeutic agencies as will enable the human organism to free itself of abnormal and toxic conditions and to set up such inherent healing processes as will restore and maintain the highest possible degree of health; that such restorative methods include all physical means and instrumentation applicable in the scientific uses of sunlight, air, water, earth, foods, the non-narcotic vegetable herbs and the magnetic, electric and etheric energies that have therapeutic relation to the biological laws and processes of life." H. 301, to amend the basic science act, proposes to designate specifically "the practice of naturopathy" as a branch of the healing art to which the basic science act applies, and to add one doctor of naturopathy to the board of examiners in the basic sciences.

MISSOURI

Society News.—Dr. Emmett P. North was elected president of the Missouri-Pacific Hospital Association, January 31; Dr. James R. McVay, Kansas City, vice president, and Dr. Henry J. Schenck, St. Louis, secretary.——Dr. Géza de Takáts, Chicago, addressed the Jackson County Medical Society, February 10, on "Surgery in Diabetic Patients," and Dr. Clay S. Merriman, Kansas City, "Cause and Treatment of Diabetes."

Bills Introduced.—S. 44 proposes to repeal the state prohibition law. H. 220 proposes that any bank or trust company may engage in the practice of medicine, surgery, dentistry or chiropody without examination and without securing any license to practice, to the same extent and in the same manner that banks and trust companies may now practice law. H. 225 proposes to authorize the mayor and board of aldermen of cities of the fourth class, among other things, to regulate and license, and to levy and collect a license tax on, druggists and the owners or managers of private venereal hospitals.

NEBRASKA

Bill Introduced.—H. 309 proposes to authorize trial judges, when in the trial of a cause the mental state of the defendant at the time of the commission of the offense is at issue, to appoint one or more, but not to exceed three, expert witnesses. The state and the defendant, however, shall have the right to call their own expert witnesses.

License Revoked.—According to the department of public welfare, the license of Dr. George L. Wagner, Deshler, to practice medicine in Nebraska was revoked, Nov. 19, 1930, following his failure to obey the order contained in a suspended sentence of the department of public welfare, Oct. 31, 1930, that he submit himself to an institution and take the alcoholic cure.

NEW JERSEY

Bill Introduced.—A. 101, to amend the workmen's compensation act, proposes to designate as "radium poisoning" that occupational disease now listed as "radium necrosis."

Society News.—Drs. Arthur J. Casselman and Hyman I. Goldstein, among others, addressed the Camden County Medical Society, February 3, at Camden, on "Loss of Sugar Tolerance in a Diabetic" and "Streptococcus Faucitis with Erythema Nodosum and Erythema Multiforme Exudativum."——Dr. Clay Ray Murray, New York, addressed the Atlantic County Medical Society, February 13, on treatment of fractures.

NEW MEXICO

Bills Introduced.—S. 21 and H. 40 propose to create a board of barber examiners and to regulate the practice of barbering. H. 40 has passed the House. H. 32 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. Such a practitioner may "diagnose

and treat diseases, injuries, deformities, or other physical or mental conditions, including the practice of obstetrics, by the use of any or all methods, such as palpating, diagnosing, and treating diseases, injuries, and defects of human beings by all known means of naturopathy, including among other things: all natural agencies imbued with the healing art such as food, water, heat, cold, electricity, vacuum cupping, mechanical appliances, and heliotherapy, provided, however, that nothing in this act shall be construed to permit the use of major surgery, serums and vaccines, and narcotic drugs."

NEW YORK

Old Age Security Plan Goes Into Effect.—The New York State Old Age Security Plan became effective, January 1. This is based on a contributory system, it is reported, which means that every person in the state, whatever his circumstances, will contribute to the cost of this new plan for the relief of the aged, either in the form of a direct tax for purposes of the state government which will include this item, or in the form of an increased cost of living by which direct taxation is filtered through the entire community.

Bills Introduced.—H. 432 proposes to modify the limitations placed by law on the practice of physiotherapy by technicians by allowing such technicians to use, in the treatment of diseases, without the supervision of a licensed physician, actinotherapy, hydrotherapy, mechanotherapy, thermotherapy, and electrotherapy, exclusive of the x-ray. S. 345 and A. 441 propose to provide that whenever a defendant's insanity or mental condition at the time of the commission of an offense becomes the issue in any criminal cause, the court may appoint one or more, but not exceeding three, disinterested legally certified psychiatrists to examine the defendant. The appointment of such experts by the court shall not preclude the state or the defendant from calling additional expert witnesses. A. 369 proposes to create a board of barber examiners and to regulate the practice of barbering.

New York City

Fifth Harvey Lecture.—Edward M. East, LL.D., Harvard University, Cambridge, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, February 19, on "Possible Immunologic Reactions with Plants."

Dr. Levene Receives Gibbs Medal.—Dr. Phoebus A. Levene of the Rockefeller Institute has been awarded the Willard Gibbs Medal by the Chicago section of the American Chemical Society. This is said to be the highest chemical award in the United States and is the third time in twenty awards that a biochemist has been the recipient. Dr. Levene received the award for his work in the application of organic chemistry to biologic problems. His research in nucleic acids, amino sugars and lecithins is particularly mentioned. Dr. Levene has been assistant in chemistry since 1905 and member, since 1907, of the Rockefeller Institute. He also has an M.D. degree from the Imperial Military Medical Academy, St. Petersburg (1891). The award will be made in May.

Seminar in Physical Therapy.—The New York Physical Therapy Society is sponsoring a seminar in physical therapy which will consist of didactic lectures and clinical demonstrations. The program opened, February 4, with "Clinical Uses of Ultraviolet Radiation" by Dr. Edgar Mayer, Saranac Lake, N. Y.; Edward E. Free, Ph.D., New York, spoke, February 11, on "Physics of Ultraviolet Radiation," and will speak, February 18, on "Physics of Photo and Heat Therapy." The following lectures will be given in Beth Israel Hospital: February 25, George H. Maughan, Ph.D., Cornell University, Ithaca, "Physiology of Ultraviolet Radiation," and Dr. George M. MacKee, New York Post-Graduate Medical School and Hospital, "Effect of Ultraviolet in Cutaneous Conditions"; March 4, Dr. Ralph Pemberton, Graduate School of Medicine of the University of Pennsylvania, Philadelphia, "Massage"; March 11, Harold J. Holmquest, B.S., Chicago, "Physics of Medical Electricity"; March 18, Dr. William D. McFee, Boston, "Electrostatic Therapy"; March 25, Dr. Frank H. Krusen, Temple University School of Medicine, Philadelphia, "Low Voltage Currents"; April 1, Dr. Clay Ray Murray, Columbia University College of Physicians and Surgeons, "Physical Therapy in Fractures"; April 8, Dr. Harry Eaton Stewart, New Haven School of Physical Therapy, New Haven, Conn., "Medical Diathermy"; April 15, Dr. William F. Schmidt, Philadelphia, "Surgical Diathermy"; April 22, Dr. Josef B. Nylin, Philadelphia, "Hydrotherapy"; April 29, Dr. Francis G. Harrison, Graduate School of Medicine, University of Pennsylvania, Philadelphia, "Physical Therapy in Urology"; May 6, Dr. Francis Carter Wood, "Indications and Contraindications of X-Ray Radiation," and Dr. George M. MacKee, "Treatment of Cutaneous Cancer and Precancerous Lesions"; May 13, Dr. Walter I. Galland, New York, "Physical Therapy in Orthopedics"; May 20, Dr. Grant E. Ward, Baltimore, "Physical Therapy in Gynecology"; May 27, Dr. Royal Storr Haynes, New York, "Posture as a Therapeutic Procedure," and Dr. Kristian G. Hansson, New York, "Posture and Exercise in Adults."

Society News.—Dr. Priscilla White, Boston, among others, addressed the Women's Medical Association of New York City, January 14, on "Care of the Diabetic Child."——Dr. William Wayne Babcock, Philadelphia, among others, addressed the Medical Society of the County of Kings, January 20, on "Practical Application of Spinal Anesthesia."——Dr. George Baehr spoke on "Diagnosis of Visceral Manifestations of Syphilis" before the Brooklyn Society of Internal Medicine, January 23. ——Dr. David Ayman, Boston, addressed the Medical Society of Bay Ridge, Brooklyn, January 13, on "Early Diagnosis and Early Treatment of Essential (Arteriolar) Hypertension."——Drs. George W. Crile, Cleveland, Dean Lewis, Baltimore, and William F. Rienhoff, Jr., Baltimore, took part in a symposium on thyroid disease presented by the Medical Society of the County of New York, January 26. Dr. Charles Gordon Heyd, newly elected president, delivered his inaugural address on "Economic Contribution of Physicians to the Community."——Dr. Russell S. Ferguson addressed the Medical Association of the Greater City of New York, January 19, on "Treatment of Cancer of the Prostate by Radiation," and Dr. George F. Cahill, on renal tuberculosis. Dr. Le Grand Kerr was elected president.——The ninth afternoon lecture for practitioners in the series sponsored by the New York Academy of Medicine was given, January 23, by Dr. Joseph F. McCarthy, on "Roentgenographic Delineation of the Urogenital Tract." Dr. Edward P. Carter, Baltimore, delivered the tenth lecture, January 30, on "Certain Aspects of Syphilitic Cardiac Disease," and Dr. Dean Lewis, Baltimore, the eleventh, February 6, on osteomyelitis. ——Speakers at the Yorkville Medical Society in the City of New York, January 19, were Drs. Abraham Hyman, on "Urological Diseases in Childhood," and Dr. Abraham A. Brill, "Psychoanalysis in Relation to Functional Genito-Urinary Disorders."——Drs. George W. Holmes, Boston, and Kenneth R. McAlpin addressed the New York Roentgen Society, January 19, on "Problems in Diagnosis and Treatment of Lymphoblastoma" and "Radiotherapy in Lymphoma," respectively.——Dr. Frank M. Frankfeldt, among others, addressed the Bronx County Medical Society, January 21, on "Some Common Rectal Disorders: Newer Considerations and Treatment."——Dr. William F. Cunningham addressed the New York Surgical Society, January 28, on "Partial and Subtotal Gastric Exclusion."——Dr. Robert T. Frank presented a paper on "Endocrine Diseases: Their Diagnosis and Therapy," before the New York Academy of Medicine, February 5.——Dr. Thomas J. Harris was elected president of the New York Physicians' Mutual Aid Association recently, and Dr. Alfred C. Prentice, secretary. The association is in its sixty-third year.

NORTH CAROLINA

Name Duke Hospital Wards.—Fourteen wards in the new Duke Hospital, Durham, were named after men prominent in medical history. Medical wards were named for Drs. William H. Welch of Baltimore, Sir William Osler, Josiah Clark Nott of South Carolina, Daniel Drake of Kentucky, and Walter Reed of Virginia; surgical wards: William S. Halsted of Maryland, Edmund C. F. Strudwick of North Carolina, Crawford W. Long of Georgia, Ephraim McDowell of Kentucky and James L. Cabell of Virginia; obstetric wards: J. Marion Sims of South Carolina, Francois Prevost of Louisiana, and Henry F. Campbell of Georgia; pediatric ward: John Howland of Maryland.

NORTH DAKOTA

Bill Introduced.—S. 79, to amend the pharmacy practice act with respect to the substances which may be sold by general dealers, proposes to allow general dealers to sell proprietary medicines in original packages and such simple household remedies as may from time to time be approved for such sale by the state board of pharmacy.

Meningitis at State Training School.—In an account of the occurrence of cerebrospinal meningitis in the state training school at Mandan in THE JOURNAL, January 31, page 365, it was erroneously stated that sixty-nine cases had occurred at

the school. The sixty-nine cases is approximately the number that occurred in the entire state during 1930. According to the state department of health, only eight cases occurred at the Mandan institution in two years.

OHIO

Bills Introduced.—S. 45 proposes to require the annual vaccination of all dogs against rabies. S. 51 proposes to regulate the practice of cosmetology. S. 58 proposes to exempt from the provisions of the medical practice act "persons treating human ailments by prayer or who only practice religious tenets of their church, if no material medicine, manipulation, or material means are prescribed or used, as an exercise or enjoyment of religious freedom: provided that the laws, rules and regulations relating to communicable diseases and sanitary matters are not violated."

OKLAHOMA

Personal.—Dr. George N. Bilby, Alva, was appointed state health commissioner, January 13, by Gov. W. H. Murray. He succeeds Dr. Clyde W. Beson.

Bills Introduced.—H. 23 proposes to create a board of barber examiners and to regulate the practice of barbering. H. 38 proposes to provide that any person, not residing within an incorporated city, who shall state under oath to any physician in the county in which he resides that he is not able to pay for medical services, shall receive such medical aid as the physician deems necessary. The physician shall be paid one half of the legal fee for such services rendered from a fund of $38,500, which is appropriated by the bill.

OREGON

Bill Introduced.—S. 103 requires all applicants for licenses to practice any form of the healing art to pass an examination, to be given by the state board of higher education, in anatomy, physiology, pathology, chemistry and hygiene, before presenting themselves for examination by their respective professional or cult boards.

Society News.—The Oregon Pathological Society was recently organized by pathologists of the state medical society. Officers are Drs. Frank R. Menne, president; William M. Wilson, vice president, and Warren C. Hunter, Portland, secretary-treasurer. Meetings are to be held the second Monday in each month at the University of Oregon Medical School.——Dr. Ernest A. Woods, Ashland, discussed "Vision and Color Perception" at the Jackson County Medical Society, Ashland, Oct. 16, 1930.——Dr. Carl Henry Davis, Milwaukee, addressed the Portland Academy of Medicine, Dec. 11, 1930, on "Leukorrhea—A Neglected Symptom."——Dr. Horace J. Whitacre, Tacoma, addressed the Portland City and County Medical Society, January 9, on "The Financial Problem of the Wage-Earner in Illness."

PENNSYLVANIA

License Revoked.—The state board of medical education and licensure revoked the license to practice medicine in Pennsylvania of Dr. Frederick J. E. Sperling, Wilkes-Barre, January 30, because of his conviction in the county courts of having performed a criminal abortion.

Society News.—The twenty-third annual session of the Pennsylvania Conference on Social Welfare will open at Reading, February 25; Drs. Kendall Emerson, New York, and James Allen Jackson, Danville, among others, will speak on "Recent Progress in the Public Health Field" and "Rôle of Mental Hygiene in the Promotion of Mental Health," respectively.

Bills Introduced.—S. 33 provides that in certain counties where the fines, penalties and moneys collected from forfeited recognizances are paid into the county treasury, one half of such sums shall be appropriated to such hospitals within the county as are entitled to receive state aid. S. 34 proposes to authorize any borough to appropriate money for the support of any hospital which is engaged in charitable work and extends medical attention to residents of such borough.

Philadelphia

Personal.—Dr. Rufus B. Weaver celebrated his ninetieth birthday, January 10, with an informal reception at the Hahnemann Hospital, where he is a patient. Dr. Weaver was a teacher at Hahnemann Medical College for fifty-five years. In 1909 he received the first honorary fellowship of the Philadelphia Academy of Medicine, in recognition of work in anatomy.

Society News.—Dr. George P. Muller, president of the Philadelphia County Medical Society, was elected president of the Health League of Philadelphia at a recent meeting.——The Philadelphia County Medical Society conducted its annual "Heart Night," February 11; Dr. Alexander Lambert, New York, spoke on "Sudden Death and Cardiac Pain," and Dr. Harlow Brooks, New York, gave an informal talk on "Angina Pectoris."——Dr. Damon B. Pfeiffer was the speaker, February 6, at the postgraduate seminar under the auspices of the Philadelphia County Medical Society on cancer of the lower bowel.——Drs. Alexander Randall and Karl Kornblum spoke on intravenous urography, and Dr. Charles H. Frazier on "Technic for an Operation for Blepharospasm," before the Philadelphia Academy of Surgery, February 2.——Dr. Arthur J. Wagers addressed the Philadelphia Laryngological Society, February 3, on prevention of acute surgical mastoiditis.——Dr. William J. Merle Scott, Rochester, N. Y., delivered the twenty-fifth Mary Scott Newbold lecture at the College of Physicians of Philadelphia, on sympathetic activity in diseases of the peripheral circulation.——Dr. Jesse O. Arnold, among others, addressed the Obstetrical Society of Philadelphia, February 5, on "Fluid Balance in the Treatment of Eclampsia."

SOUTH CAROLINA

Bills Introduced.—H. 117 proposes to provide that before a marriage license may issue the male applicant must submit a certificate of a reputable physician stating that the male party is free from all venereal diseases at a time not more than ten days prior to the date of such application. H. 170 proposes to regulate the practice of barbering, which includes "the removal of superfluous hairs, warts, moles, or other blemishes from the scalp, face, neck or upper part of the body."

SOUTH DAKOTA

Illegal Practitioner Fined.—Carol Irvin, Sioux Falls, is reported to have pleaded guilty recently to the charge of practicing medicine without a license and was fined $50. This person is a white woman known locally as an "Indian herb doctor." The case was prosecuted by Messrs. Wall and Conway, assistant state's attorneys. Dr. Carl William Forsberg, Sioux Falls, testified for the state.

Bills Introduced.—H. 33 proposes to repeal that law which provides that in a levy or execution on a judgment for a physician's bill no exemption can be claimed except absolute exemptions and household and kitchen furniture. An absolute exemption is stated by the present law to include family pictures, pew or burial lots, family bible and books, and wearing apparel. H. 96 requires all pharmacies to be registered with the board of pharmacy and to require all pharmacies to be owned by licensed pharmacists.

TENNESSEE

Society News.—The new full time health unit of Maury County started functioning, January 1, with Dr. Hainan C. Busby as director; it was made possible by the county court appropriating $3,500, the city of Columbia, $1,500 and the state $5,000, an annual total of $10,000.——Dr. Henry B. Gotten addressed the Memphis and Shelby County Medical Society, Dec. 2, 1930, on malignant tumors of the small intestine, and Dr. William Battle Malone, on chronic cystic mastitis.

Bill Introduced.—H. 514 proposes to accord liens to hospitals, physicians, surgeons and nurses, performing services for persons who have suffered personal injury, on any settlements or judgments obtained by reason of the injuries. Such a lien, however, shall not attach to any recovery or settlement had by reason of the workmen's compensation act. A physician, surgeon or nurse refusing or failing, when requested to do so by the injured person or his representative, to testify as to all relevant facts of the case within his or her knowledge shall not be entitled to the lien.

TEXAS

Bills Introduced.—S. 103 proposes to direct the state board of health to cooperate with the United States Public Health Service in eradicating malaria in Texas, and to appropriate $50,000 for that purpose. H. 96 proposes to provide that only a store in which a registered pharmacist is employed, and which conforms to the provisions of the pharmacy act, may be designated and advertised as a pharmacy or drug store.

UTAH

Bill Introduced.—S. 21 proposes to regulate the practice of chiropody, defined as "the examination, diagnosis or treatment medically, mechanically or surgically, of the ailments of the human foot and massage in connection therewith, in all cases except the amputation of the toes or foot or the use of anesthetics other than local."

WASHINGTON

Bills Introduced.—S. 95 proposes to enact a new law regulating the possession, sale, prescribing or dispensing of narcotic drugs. H. 145 seeks to amend the workmen's compensation act so as to permit osteopaths, chiropractors and other drugless healers to render the required medical attention to injured employees.

Society News.—Dr. Waltman Walters, Rochester, Minn., delivered four addresses as the guest of the Seattle Surgical Society at its annual clinics, February 6-7. Dr. Walters' subjects were: "Evaluation of Various Gastric Operations," "Indications for and Results of Conservative Operations on the Kidneys," "Solution of Certain Problems of the Gastro-Intestinal and Genito-Urinary Tracts," and "Obstructive Jaundice: A Clinical and Experimental Study of Its Surgical Aspects."——Drs. Wilfred A. Ash and Maurice F. Dwyer addressed the King County Medical Society, February 2, on "Medical Aspects of High Intestinal Obstruction," and "Clinical and X-Ray Study of Gastric Tumors," respectively.

WISCONSIN

Bills Introduced.—S. 58 proposes to constitute the state health officer, the secretary of the board of medical examiners, and the attorney general an ex-officio state medical grievance committee to investigate, hear, and act on practices by persons licensed to practice medicine and surgery, that are inimical to the public health. This committee shall have power to warn, to reprimand and to institute criminal actions or actions to revoke licenses. A. 39, to amend the workmen's compensation act, proposes that when an employee during the term of his employment discovers that he has a hernia, such fact shall be prima facie evidence that such hernia developed during the course of the employment.

Society News.—Drs. John B. Wear, Madison, and Drexel L. Dawson, Rice Lake, addressed the Barron-Washburn-Sawyer-Burnett County Medical Society at Cumberland, Dec. 2, 1930, on "Renal Infection" and "Spinal Anesthesia," respectively.——Dr. Frederick J. Gaenslen, Milwaukee, gave an illustrated address on "Injuries and Diseases of the Knee Joint" before the Brown-Kewaunee County Medical Society, Green Bay, Nov. 25, 1930.——Dr. William F. Lorenz, Madison, among others, addressed the Grant County Medical Society at Lancaster, Nov. 25, 1930, on "Clinical Applications of Cerebrospinal Fluid Findings."——Dr. Ira R. Sisk, Madison, addressed the La Crosse County Medical Society, Nov. 18, 1930, on "Management of the Patient with Hypertrophy of the Prostate Gland."——Drs. Eben J. Carey, Milwaukee, and Hugh Cabot, Rochester, Minn., addressed the Milwaukee Academy of Medicine, Dec. 9, 1930, on "Etiology of Pathologic Bone Growth" and "What Constitutes Real Conservative Surgery of the Kidney," respectively. Dr. Richard J. Muenzner addressed the academy, Dec. 16, 1930, among others, on "Cavernous Sinus Thrombosis with Recovery."——Dr. Elven J. Berkheiser, Chicago, addressed the Outagamie County Medical Society, Appleton, January 15, on infantile paralysis.——Dr. Francis D. Murphy, among others, addressed the Medical Society of Milwaukee County, January 9, on complications of diabetes mellitus.——The Dane County Medical Society was addressed, January 22, at Madison, by Drs. Frank F. Bowman on "City Health Program for Diagnosis and Management of Pulmonary Tuberculosis"; Harry M. Guilford, "Incidence of Tularemia, Malaria and Undulant Fever," and William D. Stovall, "Value of Laboratory Methods for Diagnosis of Whooping Cough."——Dr. Elmer L. Severinghaus, Madison, addressed the Marathon County Medical Society, January 15, on "Menopausal Disturbances and Hyperthyroidism."

WYOMING

Bills Introduced.—S. 32 proposes to create a board of barber examiners and to regulate the practice of barbering. S. 37 proposes to impose a penalty for practicing medicine, surgery or obstetrics without first having received and recorded with the county clerk of the county in which the licentiate practices a certificate from the state board of medical examiners. H. 82 proposes to except from the provisions of the medical practice act "persons treating human ailments by prayer or spiritual means, as an exercise or enjoyment of religious freedom; and provided, further, that the laws, rules and regulations relating to communicable diseases and sanitary matters are not violated."

GENERAL

Unauthorized Solicitor.—R. J. Thomas, aged 37, height 5 feet 10 inches, with auburn hair and hazel eyes, is not an accredited agent of the American Medical Association. Authorized solicitors carry credentials signed by Dr. Olin West, Secretary and General Manager of the Association.

Medical Relief in the Drought Area.—A conference of health officers in the drought area was called by Dr. Hugh S. Cumming, surgeon general of the U. S. Public Health Service, for February 10, at Memphis, Tenn. The purpose was to make a survey of health conditions and to ascertain what steps might be necessary in the purchase and distribution of medical supplies for these areas, as provided in a deficiency bill passed by Congress appropriating $2,000,000 for the work.

New Instruments for Old.—Recently a young man, carrying a bag of cystoscopes and a Wappler catalogue, called on Dr. Herman L. Kretschmer, Chicago, and failing to complete a sale, offered to exchange some new cystoscopes for old ones and the difference in price. Dr. Kretschmer selected two cystoscopes from the catalogue and gave the young man four old ones and agreed to pay $88 on the delivery of the new instruments. After waiting a few months, Dr. Kretschmer wrote the Wappler company. In reply he was told that they had no such representative on the road.

Entrance Requirements at University of Vienna.—The dean of the Medical Faculty of the University of Vienna, Austria, has notified the American ministry at Vienna that American citizens who file application to become regular students in the medical department must have the degree of bachelor of science or bachelor of arts. In addition, prospective students must comply with the minimum American requirement; that is, twelve hours of chemistry, eight hours of biology and eight hours of physics. They must also take in Vienna a part of the examination (rigorosum) in anatomy, histology and physiology.

Report of National Leprosarium.—Twenty-three patients were released from the National Leper Home, Carville, La., during the year ended June 30, 1930, the annual report to the U. S. Public Health Service shows. Eight additional patients were eligible for parole, but because of their disfigurement elected to remain at the hospital. Fifty-five new patients were admitted and twenty-two died. Of 308 under treatment, 163 were receiving chaulmoogra oil by mouth and 120 were receiving intramuscular injections of benzocaine chaulmoogra oil. Approximately twenty are permanently invalided. In the neuropsychiatric service, forty-five new patients and seventy-nine old patients were examined and advised concerning neurologic manifestations. Seven were confined to the psychopathic ward. Experimental work including the use of various drugs in the treatment of leprosy, treatment of nasal lesions in the hope of preventing involvement of the eyes, administration of viosterol in orthopedic cases and roentgenologic study of bone changes are discussed in the report.

Medical Bills in Congress.—H. R. 16591, introduced by Representative Leech, Pennsylvania, proposes the erection of a veterans' hospital at or near Cresson, Cambria County, Pa. H. R. 16620, introduced (by request) by Representative Johnson, South Dakota, proposes, among other things, to make it mandatory that hospitalization and outpatient and dispensary treatment be accorded all veterans disabled from any cause. H. R. 16658, introduced (by request) by Representative James, Michigan, proposes to authorize the construction of additional hospital facilities at the various branches of the "Bureau of National Homes." H. R. 16659, introduced (by request) by Representative Johnson, South Dakota, proposes to establish a permanent medical service in the United States Veterans' Bureau. H. R. 16693, introduced by Representative Wood, Indiana, proposes that the Administrator of Veterans' Affairs be authorized to purchase the West Baden Springs Hotel, West Baden, Ind., for the hospitalization of veterans. H. R. 16702, introduced by Representative Foss, Massachusetts, proposes to authorize the enlargement and modernization of the veterans' hospital at Rutland, Mass. H. R. 12169 has been favorably reported to the House, proposing to define what constitutes the practice of naturopathy in the District of Columbia (Report No. 2432). S. 5959, introduced by Senator Walsh, Montana, proposes that the surgeon general of the public health

service be authorized to purchase from the state of Montana the state laboratory at Hamilton, Mont., constructed for the prevention, eradication and cure of spotted fever. S. 5961, introduced by Senator Hatfield, West Virginia, proposes to provide federal aid to the several states in the care, treatment, education, vocational guidance and placement, and physical rehabilitation of crippled children. S. 255, the Jones maternity and infancy bill, has been reported, with amendments, to the House (Report 2485). It was amended in the House Committee on Interstate and Foreign Commerce by striking out all after the enacting clause and inserting the amended provisions of H. R. 12995, the Cooper-Robsion bill, providing that the United States shall cooperate with the states in promoting the general health of the rural population as well as the welfare and hygiene of mothers and children. H. R. 3394, providing for the deportation of aliens convicted of violating the Harrison Narcotic Act, has been reported to the Senate, without amendment (Report 1443). H. R. 9676, authorizing the Secretary of Navy to proceed with certain public works at the United States Naval Hospital, Washington, D. C., has been reported to the Senate with amendment (Report 1436). H. R. 10166 has passed the Senate, with amendments, proposing the reconstruction of the Naval Hospital at Philadelphia. S. 5984, introduced by Senator Capper, Kansas, and H. R. 16777, introduced by Representative Zihlman, Maryland, propose to authorize the construction of a sanatorium for the District of Columbia for adult tuberculosis patients. S. 5986, introduced by Senator Wheeler, Montana, proposes to make it mandatory that the Administrator of Veterans' Affairs furnish hospitalization for all veterans not dishonorably discharged, without regard to the nature or origin of their disabilities, and to create service-origin presumptions for any chronic or constitutional disease which developed a 10 per cent degree of disability prior to Jan. 1, 1925. S. 6015, introduced by Senator Wagner, New York, proposes to provide for the retirement of certain medical reserve officers of the United States Army, Navy and Marine Corps. S. 6019, introduced (by request) by Senator Reed, Pennsylvania, proposes to amend the World War Veterans' Act to provide, among other things, that the Administrator of Veterans' Affairs shall furnish hospitalization and outpatient and dispensary treatment to all veterans not dishonorably discharged, without regard to the nature or origin of their disabilities. S. 6020, introduced (by request) by Senator Reed, Pennsylvania, proposes to establish permanent medical service in the United States Veterans' Bureau. H. R. 16782, introduced by Representative Smith, Idaho, proposes to authorize the erection of a veterans' hospital at Lava Hot Springs, Idaho. H. R. 16837, introduced by Representative Shott, West Virginia, proposes to provide for federal cooperation with the several states in the care, treatment, education, vocational guidance and placement, and physical rehabilitation of crippled children. H. R. 16854, introduced by Representative Douglas, Arizona, proposes to provide for the erection of an addition to the veterans' hospital at Tucson, Ariz. H. R. 16853, introduced by Representative Douglas, Arizona, proposes to authorize the erection of an addition to the veterans' hospital at Whipple, Arizona. S. 3344, a bill supplementing the National Prohibition Act for the District of Columbia, was considered by the Senate during the week beginning February 2. An amendment to the bill proposed by Senator Hawes, Missouri, which would have removed in the District of Columbia the restrictions imposed by the National Prohibition Act on physicians with respect to the prescribing of vinous and spirituous liquor, was defeated by a vote of 45 to 25.

MEXICO

Mexico Limits Influx of Foreign Physicians.—The secretary of the interior of the Republic of Mexico has issued instructions to the department of immigration to the effect that foreign physicians will not be permitted to enter the country to practice unless they have previously been authorized to do so by the department of the interior. These instructions were based on a recommendation from the department of public health, which pointed out that many of the foreign physicians coming to Mexico to practice do so under false claims, having received their certificates of graduation in medicine either from a diploma mill or having obtained it otherwise by irregular means. Some practice under their second name when it happens to be the same as the last name of a widely known physician. The department of public health has received complaints from victims of foreign quacks. An additional reason for restricting the immigration of foreign physicians is the severe economic condition of Mexican physicians and the fact that the influx of foreign physicians makes worse the economic situation of the physicians.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 17, 1931.

The Most Significant Relic of Primitive Man

At University College, Prof. G. Elliot Smith gave a lecture on the Peking man, with the Chinese minister presiding. He described the cranium found in the limestone cave near Peiping, Dec. 2, 1929, as the most significant and illuminating relic of primitive man ever recovered. Its characters established a bond of union between the other two types of early man comparable in age, *Pithecanthropus* of Java and *Eoanthropus* of Piltdown, England), which before this discovery seemed to be irreconcilable with each other and were both regarded with doubt. The finding of *Sinanthropus* was important not only for the intrinsic evidence it provided but also because it conferred respectability on the other two. The investigations in China had established confidence in the other two genera and destroyed doubts regarding their nature and significance. The evidence of the geological age of the Peking man—the early Pleistocene—was more certain than that of the other two, for the remains were found on the spot where their original owners left them when they died in the cave. The vast collection of animal bones, which had been carefully studied, belonged to creatures contemporaneous with Peking man. They had been studied by many competent paleontologists, who agreed that they referred to an epoch more recent than the Pliocene. This could not be translated with certainty into figures of years, but Prof. A. W. Grabau of Peiping University believed that the changes in the radioactive elements in early Pleistocene rocks suggested 1,000,000 years. Whether or not the Peking man was older than the fossils of Java and Piltdown, there was no doubt that he represented a more primitive type. His characters were more generalized, some being distinctly reminiscent of man's simian ancestry and others foreshadowing qualities regarded as distinctive of *Homo sapiens.* They made it easier to picture the original characters of the human family by revealing a type which, though human, was curiously apelike and obviously close to the main line of descent of modern man. In spite of the thoroughness of the investigation, eminent paleontologists were making erroneous statements. In France and Germany they were claiming already that Peking man belonged to the genus *Pithecanthropus;* in America, that he was a Far Eastern example of Neanderthal man; and others again that the Chinese fossils were not human. Having just made a careful examination of the remains on his visit to China and compared them with human and simian skulls, Prof. Elliot Smith confidently supported the claim of the Canadian anatomist Dr. Davidson Black that *Sinanthropus* was a member of the human family who revealed in every quality of his skull evidence to distinguish him from all known human types and to justify the separate generic rank suggested to define his status.

The Centenary of James Maxwell

The University of Cambridge, October 1 and 2, will celebrate the birth of James Clerk Maxwell, who, after Newton, may be regarded as the greatest scientific genius of Britain. He was the founder of the great school of experimental physics in Cambridge. He died at 49, before the world appreciated his genius. During his short life he translated the results of Faraday's experimental work into exact mathematical form and laid the foundations of general electromagnetic theory by his treatise on electricity and magnetism. His discovery of the electromagnetic nature of light led directly to the development by later workers of wireless communications, while his name is forever linked with the fundamental laws of the theory of gases. Addresses will be given at the celebration by great con-

temporary scientists—Einstein, Langevin, Larmor, Planck, Jeans and J. J. Thomson. Maxwell's connection with Faraday makes it appropriate that his centenary should follow the September celebration in London of the centenary of Faraday's discovery of electromagnetic induction.

Altering the Constitution of the Royal College of Surgeons

There are about 2,000 fellows of the Royal College of Surgeons and 18,000 members. The fellows pass a higher examination in surgery and are designated F.R.C.S. They are surgeons in the full sense of the term and generally are members of hospital staffs. Many of them practice only surgery or one of its special branches. They include all who are eminent in English surgery. The members pass a lower examination, devised for those who will engage in general practice, and are designated M.R.C.S. They usually practice surgery only in a minor form, their working being mainly medical. The college is governed by the council, which is elected from and by the fellows. The only occasion on which the members have an opportunity to say anything as to the government of the college is the annual meeting of members and fellows, when they can bring forward resolutions, which are submitted to the council. At this meeting they have for forty-two years passed a resolution that the members should be given the power to elect representatives on the council. This the council has always refused. At the 1929 meeting the members were twitted by the president, Lord Moynihan, with the fact that the number who attended was small (about fifty) and that he always saw the same faces. There was therefore no evidence that representation was desired by the members at large. At the 1930 meeting, which recently took place, the members demanding representation replied by bringing forward the result of a poll taken by postcard in Great Britain and the Irish Free State. This showed that for 12,766 cards sent out 6,832 votes were received in favor of representation and only 156 against. At the meeting, much was made of this; the argument was the "justice" of the claim for representation of nine tenths of the college roll and the need to protect the members against unqualified practitioners. The last argument shows a desire to bring the college into medical politics and to engage in work already fully performed by the British Medical Association. When a vote was taken, the request for representation was carried by 43 votes to 1. The president said in reply that the question of representation of the members had always been regarded by the council as of the gravest importance and that a special meeting would be held to consider the resolution. At this meeting the council adopted the following resolution:

> The main functions of the college are to promote and encourage the art and science of surgery for the common weal, and for this purpose to conduct the examinations of the college and to maintain the great museum and library placed under its care. In carrying out these functions the council organizes lectures and demonstrations, provides facilities for and encourages research, fosters social intercourse and the amenities of the profession, and in every way possible renders the college an instrument for the advancement of surgery in its widest sense, not only for the benefit of the members and fellows, but the whole profession throughout the empire. In the opinion of the council these functions are well carried out under the present constitution; after further and prolonged deliberation the council has therefore decided that it is not desirable to alter the constitution of the college by providing for the direct and separate representation of members of the college upon the council. The decision of the council is in conformity with the opinion expressed three years ago by the body of fellows of the college who are the electorate.

Though the agitation of the members for representation on the council has been carried on for forty-two years and has received some support in the medical press, the decision of the council is right. Its claim that the functions of the college are well carried out under the present constitution is abundantly proved and has never been questioned. The handful of politically minded members who carry on the agitation has never been able to suggest any fault in this respect or, indeed, shown any interest in these functions. The members have not the competence of the fellows for the government of the college, for they are not surgeons in the important sense of the term, but general practitioners. One of the objections of the agitators, as revealed at the annual meetings, is to drag the college into medical politics. This would be a descent from its proper sphere, which is purely scientific. It maintains the greatest pathologic museum in the world, which is a development of the collection made by the "father of scientific surgery," John Hunter. It is the home of English surgery. It does everything possible for the advancement of surgery. It maintains also a library and laboratories for research, in the highest degree of efficiency, and organizes lectures by all who are contributing to the advance of surgery. The conservator of the museum is Sir Arthur Keith, who is famous as anatomist, physiologist, pathologist and anthropologist. It is to be hoped that the control of this great college will remain in the hands of "surgeons," without any intrusion of those inspired by motives which have nothing to do with the advancement of surgery.

BERLIN

(From Our Regular Correspondent)

Jan. 5, 1931.

Attack on the Law Concerning Abortion

Dr. Julius Wolf, professor of political science, launched an attack recently on section 218 of the penal code, which pertains to abortion, in a work entitled "Mütter oder Embryo." He advances arguments to prove that the present law is a survival of barbarism, emphasizing the misery of the woman who becomes a mother against her will, and the great suffering caused by abortion brought about by charlatans. With passionate zeal, he takes up the cudgels against all those (ethicists, religionists, jurists, physicians) who approve all kinds of modifications and exceptions but who support the law imposing penalties on abortion. He urges that the civil state has not recognized that the care of the child is the correlate of the duty to give it birth, or at least that it has not fully grasped the significance of the fact. Per se, Wolf is an opponent of abortion; for he does not fail to recognize, nor does he minimize, its moral and physical dangers. He, too, gives prophylaxis the preference. But, in addition to the medical indications stated in the draft of the penal code, he recommends making the interruption of pregnancy permissible, on request of the gravida, within the first three months of pregnancy "if the capacity of the gravida to bear children is reduced; if offspring is undesirable for eugenic reasons, or if financial conditions constitute a contraindication to birth." If such abortions are then carried out according to the best scientific knowledge, he contends that that will be a victory for hygiene no less valuable than other attainments of which it may boast.

The majority of physicians, in whose hands the interruption of pregnancy lies, for the most part (and should lie to a much greater extent), have been unable to accustom themselves to the idea that they should carry out any important intervention for other than medical reasons. As medical reasons they consider the risks affecting the health of the gravida, and, in this connection, they attach a certain amount of importance to economic conditions, since, with identical risks, the health of a gravida in poor circumstances might be endangered, whereas the conditions that obtained would constitute no menace to a woman with adequate means.

It has been pointed out, however, that this so-called official attitude of the Deutscher Aerztetag (THE JOURNAL, July 19, 1930, page 216) does not necessarily coincide with that of the majority of the individual physicians. In this connection, the results of an inquiry instituted among the physicians of Hamburg are of interest. Of 1,266 questionnaires sent out, replies were received to 880. Of this number, only 41 expressed themselves in favor of permitting any physician to perform an abortion; 25 would accord such permission only to certain clinics. The purely social indications for abortion were approved by 339 and opposed by 517.

The attitude of women physicians toward the question is naturally of great importance. Several months ago, 356 women physicians of Berlin made far-reaching demands resembling those of Professor Wolf. Soon afterward an opposing manifesto was issued by another group of women physicians. Recently, the League of German Women Physicians discussed the subject. Women physicians belonging to widely different groups expressed their views. Physicians with experience in German consultation centers on marriage and sex matters, and physicians from Russia, gave their opinions. That the present situation for women is beset with many difficulties was admitted by all the speakers and also during the general discussion that followed. The need of providing adequate care for the married and for the unmarried mother was emphasized. The need of a reasonable birth control was universally admitted. However, no definite decision was reached with reference to section 218 of the penal code, pertaining to abortion.

Treatment of Disorders of the Feet

The Deutsche orthopädische Gesellschaft has established criteria for the treatment of disorders of the feet, the purpose being to oppose invasions of medical fields by the administration of sick benefit funds. Therein it is rightly emphasized that only the physician can decide whether, in a given case of foot or leg disorder, inlay treatment is indicated. Therefore, the procuring of inlays from administration officials of the sick benefit funds, surgical supply houses, or shoe stores, without consulting a physician, is disapproved. In many cases it is a waste of money, causes dissatisfaction in the minds of patients, and not infrequently damages them directly, since the existing disorders are accentuated or serious disorders are overlooked and neglected. In most cases of disorders of the feet an inlay made especially for the patient is absolutely required, just as every eye patient needs a particular lens. The procuring of an individual inlay is, however, the prerogative of the orthopedic specialist. For the majority of foot patients a so-called "normal inlay" does not exist, because of the great individual differences in the shape of the feet and in the nature of disorders of the feet. The taking of individual measurements for an inlay, by means of a plaster-of-paris mold or some other scientific method, is the affair of a specialist and must be done personally by the specialist or must at least be supervised by him directly, and must be paid for as the performance of a physician. Likewise, the fitting of an inlay furnished by a surgical supply house is the affair of a specialist.

The Psychology of the Political Criminal

In times of political unrest, such as are now being experienced, political crime flourishes, and passions and instincts that possibly would have otherwise found a different outlet seek expression in this field. In a recent address, Professor Hübner, psychiatrist of Bonn and director of the university clinic for mental diseases, gave some information on the psychology of the political criminal, basing his statements on some eighty cases dating from the period 1914-1930, the greater portion of which concerned treason and the lesser portion espionage. In this connection he described various types of spies: the cavalier spy—natures that feel a need of expressing themselves and have an uncontrollable fondness of adventure, who, as a rule, are not influenced by the greed of gain; natural swindlers, who are driven to take up espionage by a desire for gain, and the passive, unsteady natures, who are sought out by the opponent and are utilized for his purposes. Many hysteriacs or cyclothymiacs are induced by a certain fondness for boasting to betray secrets they have learned of by chance —without thinking of the fact that the act is punishable by law. Among these types, alcoholism and morphinism play a big part. Professional spies are nearly all caught, and either commit suicide or receive severe penalties. Most of them never settle down to a regular life. Among the types of revolutionists, those who furnish the brains for the enterprises stay always in the background and thus rarely incur any great danger. Such organizers and promoters are cool, calculating, conscienceless personalities, highly sensitive and possessing a high self-esteem, who display great shrewdness in choosing their tools for the execution of their plans. Among these are the propagandists possessed of certain powers of oratory, together with considerable histrionic talent—persons who are fond of being in the forefront and who exert no slight influence over the masses. They are not always persons of high intelligence, and they present only in part ideas of their own; they are often lacking in critical judgment and, as a rule, do not maintain their position long. But the propagandists who have the capacity and the inclination to put their words into action take a definite stand for their political convictions, though they know that their influence will be of limited duration and that they are doomed to meet disaster. They are impetuous natures that shun no personal danger and that win temporary success through inspiring fear in their milieu. Another less common type of revolutionist are the fantastic world reformers—often dreamers unable to distinguish the feasible from the impossible. They are egoistic, petty and revengeful characters that do not maintain themselves long as leaders. Also the discontented and complaining types, which desire a change in conditions but usually do not possess the capacity of creating anything new, quickly pass off the stage. The last group is composed of submissive conformers, among whom there are many persons greedy of gain who have been raised to a position of prominence by chance. Their goal is not political and they readily assent to the opinions of the ruling majority until they have achieved their aim or have been forced by conditions to comply. Among the subjects examined by Hübner there were alcoholists, morphine addicts, imbeciles, epileptics, hysteriacs and schizophrenics. The most dangerous types are the *"geistige urheber,"* or persons with an impelling desire to launch something new and startling, and the *"propagandisten der tat,"* propagandists who insist on expressing their views by energetic and ofttimes violent action.

ITALY

(From Our Regular Correspondent)

Dec. 15, 1930.

Congress of Industrial Medicine

The ninth Congresso nazionale di medicina del lavoro was held recently in Rome, at the Istituto di patologia medica del Policlinico. Professor Devoto of the University of Milan, in his inaugural address, after summarizing the most recent manifestations concerning the pathology of labor, emphasized the importance of the topic to be discussed: "The Problem of the Respiratory Pathology of Dusts."

RESPIRATORY DISEASE AND DUST

The discussion of the first topic, "Respiratory Diseases Due to Dusts," was divided into several parts, each assigned to a different speaker. Professor Caccuri of Naples, who discussed part I, on the etiology and pathogenesis of respiratory diseases due to dusts, pointed out that, with the progress of social legislation and with the extension of insurance against disease, this group of disorders would certainly be included among the diseases for which compensation can be claimed under the workmen's compensation act. It is advisable, therefore, to collect in advance all information necessary to facilitate the work of the physicians who are called on to decide on the relations between a pathologic condition and the mode of employment, and hence admit or deny the compensability. According to the speaker, the term "pneumonoconiosis" should be restricted to cases of pulmonary fibrosis, while all the other respiratory disorders that are due to dusts and are strictly associated with the work in which the workman is engaged should be designated respiratory diseases due to dusts. It seems advisable to divide dusts into two groups, according as the action is mechanical or chemical. Many classes (workers in tobacco, cotton, hemp, flour, cement, ceramic products) are frequently subject

to bronchitis. True types of pneumonoconiosis are encountered among those who work in surroundings where there is siliceous dust, whether pure or mixed with other substances (miners of coal, granite, asbestos, gold, iron; stone cutters, workers in ceramics). Workers in hemp, linen, silk, furs, and the like, suffer frequently from bronchial asthma. Miners of cobalt develop frequently cancer of the lung. According to recent research, pulmonary anthracosis should not be considered as a disease; if the black pigment is pure carbon, without a trace of silica, it cannot provoke pulmonary sclerosis; it is, however, the cause of a morbid state and may give rise to pathologic changes of various kinds.

With respect to the manner in which the particles of dust permeate the various zones of the lung, it is necessary to take account not only of the lymph currents but also of the continual stretching that the lungs undergo during the respiratory acts. Often the patient does not complain of any disturbance and it is only the radiologic examination, together with the functional tests, that reveals the deviations from normal. Before subjective and objective disturbances can arise, the so-called margin of safety must be exceeded; for, in general, it may be stated that there is an excess of pulmonary tissue. Some dusts provoke a state of general hypersensitivity, which affects more particularly the respiratory apparatus, giving rise to an asthmatic syndrome.

The paper on part II, concerning the pathologic anatomy and the clinical aspects of respiratory diseases due to inhalations of dust, was presented by Professor Coppa of Naples, who distinguished, among the disorders of the organs of respiration, due to inhalation of dust, diseases of the upper air passages, diseases of the trachea and the bronchi, and pulmonary diseases. For each group of disorders he described the means of defense employed by the organs of respiration and the pathogenesis of the lesions that develop. Nearly all these morbid types are of a chronic nature. One of the more grave lesions is chronic catarrhal rhinitis, which is frequent in all the classes of workmen who work in a dust-laden atmosphere. This lesion is important, not only in itself but also because it induces a lessening of the means of defense available to the organism for the limitation of the invasion of dusts into the lower air passages. Other lesions characteristic of the nasal cavities are ulceration of the septum, found in workmen who come in contact with dusts of chromates, and also in cement workers. The inhalation of calcium dust gives rise to burns of the oral cavity, which, though slight, are painful. The bronchial disorders are rather more important than those of the pharynx and of the larynx. The most harmful for the bronchi are the siliceous dusts. Among sulphate workers, textile workers, and the like, stubborn chronic bronchitis is found, and in the sputum it is easy to discover, without the aid of the microscope, the characteristic elements of the inhaled dust. Sometimes the sputum has a characteristic color, being black among the coal miners, pinkish among those who inhale the dust of iron oxide, and grayish or bluish in sulphate workers. Among the pulmonary disorders due to dusts, the chronic forms have occupational characteristictics. The speaker suggested dividing them into three large groups: (1) pneumopathies due to dusts of local mechanical, chemical action; (2) pneumopathies due to dusts of humoral action; (3) pneumopathies associated with tuberculosis, tumors or mycosis. The first group is the most numerous and the most important. To this class belong also the pneumonoconioses. By pneumonoconiosis is meant only chronic interstitial pneumonitis, such as was described by Zenker and which is characterized by extensive processes of fibrosis, with areas of atelectasis and emphysema and with production of cavities. Between the subjective disturbances and the results of the radiologic examination, on one hand, and the clinical examination there exists a notable disagreement that is absolutely typical of pneumonoconiosis. The diagnosis of this morbid type is reached by ruling out, above all, tuberculosis and by evaluating then all the anamnestic, environmental and individual data, with the aid of the radiologic examination and the examination of the sputum. The second group of pneumopathies, caused by dusts of a humoral action, includes the anaphylactic disorders of occupational origin, such as pollenosis and bronchial asthma. Often it is not easy to discover the hypersensitizing cause, which may be the inhalation of the dust of cement, or porcelain and the like.

Dr. Sgambati Pastena of Naples took up at this point the discussion of part III, radiologic research in pneumonoconiosis. The speaker described the radiologic picture of pneumonoconiosis, which varies according to the three stages of the morbid process. The first stage is characterized by an accentuation of the pulmonary design. There is an absence of clinical phenomena and subjective disturbances. In the second stage, there is observed a uniform punctate appearance of the pulmonary tissue, due to the presence of numerous small foci. The shadows of the hilus are enlarged. There is some evidence of dry localized pleuritis, and sometimes there is a slight emphysematous condition of the base. In this stage the subjective disturbances are slight and the clinical signs scarce. In the third stage one observes large roundish shadows, with rather clear outlines, scattered over the pulmonary fields, of varying size and localized chiefly in the middle areas. The apexes are nearly always immune. The pleuritic signs are more marked. Subjectively, the disturbances in this stage are noteworthy, and the clinical signs are numerous but always disproportionate to the radiologic manifestations. The characteristic phenomena, from the radiologic point of view, for the diagnosis of pneumonoconiosis are: aspect of the lungs resembling wet snow; symmetrical localization of the lesions, with prevalence in the middle portion of the pulmonary fields; apexes normal; apparent discrepancy between the radiologic manifestations and the clinical data. The differential radiologic diagnosis between pneumonoconiosis, tuberculosis, tumors and pulmonary syphilis is often rather difficult and should be supplemented by clinical and laboratory data. The speaker closed his discussion by proposing the drafting of a resolution to be sent to the authorities in charge of industrial hygiene, to the effect that all workmen admitted to dusty employments be obliged to furnish a roentgenogram of their lungs. The adoption of this proposal (previously advanced by Tandoia and Karina-Marinucci, at the International Congress of Tuberculosis, held in Rome, with respect to the sons of tuberculous persons) would make it possible to admit to such industries only persons whose respiratory apparatus is sound. By repeating periodically the radiologic control, it would be possible to detect a quiescent pneumonoconiosis by the clinical signs before it could do serious damage to the health of the workmen.

Many conventionists took part in the discussion of the topic in hand. Professor Quarelli emphasized the need in every case of giving a radiologic examination. He brought out the importance of the intervention on the reticulo-endothelial system of the lung in pneumonoconiosis and referred to his recent researches on the behavior of cholesterolemia in asbestosis. In this disorder the speaker found diminution of the cholesterol content of the blood.

Professor Devoto, while not denying the existence of positive radiologic pictures in cases of pulmonary silicosis without clinical symptoms, declared them to be rather rare. He suggested that the congress should apply to the Consiglio nazionale delle ricerche to obtain the necessary aid to carry on extensive researches on pneumonoconiosis due to sulphur. The studies should be done in Sicily, where sulphur abounts, and could be carried out at the Clinica medica in Catania, which is under the direction of Professor Ferrannini.

Dr. Turano asserted that the marble dust of Carrara is harmless and holds that it is incapable of producing changes in the respiratory apparatus.

Professor Ferrannini, in view of the importance that the sulphur industry has in national economics, considers it necessary to make a profound study of the diseases associated with the handling of sulphur.

Numerous nonofficial communications were presented. Caso of Naples considered the respiratory diseases of coal heavers. An inquiry made on 450 coal heavers, in the port of Naples, revealed that 85.5 per cent of them were affected with diseases of the respiratory apparatus, with a prevalence of diffuse bronchial catarrh (64.2 per cent). Cima carried out spirometric researches on coal heavers and microscopic researches on their expectorations. He noted diminution of the respiratory capacity and the presence in the sputum of exfoliated cells mixed with particles of coal. Faso explained his method of research for the chemical diagnosis of coal in anthracotic pulmonary tissue. Pignatari found that, among workers in hemp, 70 per cent were affected with diffuse bronchial catarrh, 10 per cent with bronchial asthma, and 20 per cent with apical sclerosis.

The communications having been presented, Professor Ranelletti spoke on the postgraduate school of industrial medicine, recently established at the University of Rome.

Milan was selected as the meeting place for the next congress, which will be held in 1932, since in 1931 an international congress will be held at Geneva. The topics on the program are: (1) the work of intellectuals, (2) work in the fields, and (3) the pathology of solvents.

BELGIUM

(From Our Regular Correspondent)

Jan. 3, 1931.

The Congress of Occupational Medicine

The twenty-second Congrès de médecine professionnelle, held at Brussels, was well attended. There were three topics on the program, in the presentation of which the following conclusions were brought out:

THE EXCESS OF PHYSICIANS

There is an excess of physicians in parts of the country and it is feared that the same condition will exist in all the provinces. The congress passed a resolution to the effect that a committee, on the basis of the indications pointed out in the discussions, should inquire into the best means of remedying the condition, among others: (1) the recovery, for the benefit of the medical profession, of a number of special sources of income that have been allowed to slip gradually into the hands of persons not authorized to practice the art of healing; (2) an energetic movement, with the use of all possible recognized means, to induce more young Belgians to take up a colonial career.

SOCIAL INSURANCE

The Fédération médicale belge, which comprises nearly all the members of the medical profession in Belgium, intends to give its loyal support to the proposed system of social insurance, provided the insurance law does not interfere in any way with the free practice of medicine. Consequently, the twenty-second Congrès de médecine professionnelle trusts to the directing committee and to the Commission des assurances sociales to bring it about that the law as passed by parliament shall be in absolute conformity with the *charte médicale* unanimously adopted by the general assembly, Dec. 8, 1929. It passed a resolution that all the articles of the *charte médicale* be officially endorsed by the law. The congress passed also the following resolutions: 1. Previous to the passage of the social insurance act, the congress advocates the passage of the bill creating an ethical order of physicians, the purpose of which is to protect the medical profession by reducing to a minimum the fears and the constant criticisms offered with reference to social insurance. 2. Medicine must retain its free and independent character, and especially the rôle of the family physician, which is in no wise incompatible with social medicine, must not be impaired by overstandardization, which takes the soul out of medicine. 3. Through the influence of the directing committee, and by all other means possible, the eight points approved by the Fédération médicale belge, with reference to the attitude of medicine toward social insurance, should become widely known and accepted. 4. The medical profession of Belgium, and particularly the young men, must be constantly enlightened in regard to the dangers that beset the profession.

THE ADMISSION OF PAY PATIENTS TO HOSPITALS OF THE PUBLIC WELFARE DEPARTMENT

The twenty-second Congrès de médecine professionnelle, after discussing the paper pertaining to the terms of admission for pay patients to hospitals of the public welfare department, declared that it appeared incompatible with the law in regard to public welfare that persons with adequate means should be admitted to the hospitals of the public welfare department, but that nevertheless it is ready to approve the granting of such admission in view of recent social developments, provided account is taken of the precise considerations announced to the senate by Senator Digneffe; that is to say, with regard to the free choice of physician and the payment of fees directly to the attending physician. The congress congratulated the committees of the Assistance publique that have already accepted this view, much to the satisfaction of all physicians, and urged the public authorities and the general public not to lose sight of the fact that, if this appeal of the physicians is rejected, it will signify the suppression, within a short time, of free medicine and the introduction of state medicine.

School Medicine

The Comité d'entente franco-belge passed a resolution, based on a communication submitted by Mr. G. Rency, on the subject of overstudy in schools. The congress discussed the fact that there are no physicians among the members of the councils on secondary instruction in Belgium, and recommended that physicians be chosen on these councils, and, in general, the extension of the rôle of the physician in instruction of all ranks or degrees. The congress suggested as a remedy for overstudy a division of the subject-matter and the sacrificing, where overstraining existed, of certain less important study material; in other cases, classes can carry the full load. The congress held that it would be well to distinguish carefully the class hours properly so called from the study hours—preferably under the control of the professor. If the study hours could be carefully controlled, it would bring considerable relief to the pupil. The congress cannot approve the complete suppression of study hours carried on outside the class, as such study is indispensable in several branches of learning; but the instructors should be careful about distributing the tasks of the pupil equally over the different days of the week.

Mental Patients on Parole

New regulations concerning the discharge on parole of mental patients from institutions have been enacted. The physician, with the written consent of the authority or of the person that caused the internment, can permit the temporary removal of an inmate of an institution or his return to his family, on parole. The names of inmates of institutions who are dismissed on parole will be entered by the physician in charge of the hospital in a special register and the competent prosecuting attorney will be immediately notified; likewise the mayor of the town or commune in which the patient resides. Temporary discharge will become permanent after the lapse of three months unless, before the expiration of such time, the parole period has been prolonged. Such prolongation can be renewed before the expiration of any three months period, except that the total duration of the parole may in no case exceed one year. After the discharge has been declared final, reinternment in the hospital can be accomplished only by means of the usual legal commit-

ment. The authorities who had been informed of the discharge on parole should be informed of any prolongation of the parole period or of the reinternment of the patient in the psychopathic hospital.

The New Buildings of the University of Brussels

Stirring ceremonies marked the opening of the buildings erected at Solbosch with the aid of the C. R. B. Educational Foundation, and on the boulevard de Waterloo with the help of the Rockefeller Foundation. Delegations of Belgian and foreign universities brought to the University of Brussels evidences of the interest of the world of letters. Addresses were delivered by J. Servais, Rector G. Smets, Professor Berthelemy and Minister Vauthier. The king summarized the purpose of the ceremonies with these words: "Intellectual cooperation is a pacifying influence the importance of which must be recognized. When based on disinterestedness, it has an incontestable moral value, the influence of which, it is to be hoped, will be extended as we learn to appreciate its benefits. The earnest occasion that has called us together, coming, as it does, after that celebrating, two years ago, the inauguration of the new Louvain library (also under the auspices of our friends in America), acquires thus a special significance that the speakers who preceded me have so ably brought out."

At the inauguration of the School of Medicine, which was attended by the queen, Professor Bordet recalled the memory of Professor Depage, who secured, through American philanthropy, these most generous gifts to the university.

In well chosen words, Mr. Gibson, the ambassador of the United States, referred to the important part played by Mr. Hoover and Mr. Francqui in the creation of the C. R. B. Educational Foundation. He called attention also to the great figure of Dr. Paul Héger. Mr. Kenyon's speech in the name of the British delegation and Mr. Henri Pirenne's words in behalf of the other delegates were warmly applauded.

The Medical Association of Katanga

Under the name of Cercle médical du Katanga, an association that groups together as corporate members the doctors of medicine, the veterinarians and the pharmacists resident in the province of Katanga, to the number of about eighty, has been formed. This association, an affiliate of the Société belge de médecine tropicale, has been placed under the honorary presidency of Dr. Trolli, chief physician of the colony. The Cercle médical du Katanga, the headquarters of which is at Elisabethville, will hold monthly meetings of the members residing in the chief town of the province as well as any transients who may desire to attend, for the purpose of discussing the questions of hygiene or medicine that have a bearing preferably on local activities and live problems.

JAPAN

(From Our Regular Correspondent)

Dec. 10, 1930.

Business Depression and the Hospitals

Since the business depression in this country, the patients treated in hospitals have greatly decreased in number with the exception of those treated in charity hospitals. During the first six months in 1930 the cases treated in the 150 hospitals in Tokyo amounted to about 303,000, which was a decrease of 154,000 in comparison with the number during the same period in 1929. There are nearly 150 vacant beds in the hospital attached to the medical department of the Tokyo Imperial University, where there used to be no vacancy; 180 beds are unoccupied in the hospital of the Keio Medical College. And the number of outpatients has also fallen to as many as 0.4 per cent a day compared with that of 1929 in the latter hospital. On the other hand, all charity hospitals in Tokyo are now full of patients, and some outpatients come as early as 4 o'clock in the morning. The increase in the number of patients is so great that some of the charity hospitals have had to increase the number of physicians. For instance, in the Tsukiji Charity Hospital from 250 to 400 more patients are treated every day. And those patients free of charge in the hospitals do not like to leave the hospital even after recovery.

Birth Control in Tokyo

In spite of strong opposition, the Tokyo authorities, mainly through the efforts of the assistant mayor, Mr. Shirakami, have kept the office for advice regarding birth control at Shiba in operation since January, 1930. It is reported that he has evolved a new plan of birth control for the benefit of the poor in the city. With the aid of the physicians in the municipal hospitals in addition to Dr. Mazima, member of the municipal assembly, who has been to Europe investigating birth control, the authorities are going to give a course of lectures to municipal employees and social workers in each ward of the city. Mr. Shirakami intends to have them instruct 9,000 families suffering from the heavy burden of seven or more children with a small income to support them. Dr. Isoo Abe, one of the leaders of the social democrat party, is of the opinion that by this means the poor will be saved from the great difficulties now encountered in making a livelihood and that one of the problems of population and unemployment will be solved.

Number of Physicians in Japan

The number of physicians in this country in 1930 is reported to be 48,804, 43,676 of whom are engaged in practice, which is 6.94 per 10,000 people. The proportion of 15,573 dentists to 10,000 people is 2.31, that of 49,399 wet nurses is 7.69, and that of 18,366 pharmacists is 2.92. In comparison with the number year before last, that of doctors is increased by 944, and 2,790 new graduates are expected from medical colleges at the end of March.

First Physical Training Celebration

Under the auspices of the Japan Physical Training Union, the first celebration was held in Tokyo, Nov. 2, 1930, during health week. The ceremony was held in the parks of Hibiya and Ueno, and the minister of education attended the latter, which was begun at 9 o'clock in the morning. During health week the educational ministry planned to broadcast lectures on physical training: an address by Baron Yamakawa, chief of the physical culture section of the educational ministry; "General Survey of Land Sports," by Mr. Hiranuma, chief of the Japan Physical Training Union; "Water Sports," by Mr. Suehiro, professor at the Tokyo Imperial University; "Baseball Matches," by Mr. Ashida, chief of the Japan Baseball Union, and other addresses.

Medical Meetings

The Local Governors' Conference was held, Oct. 10-11, 1930, at the premier's residence, and the topics discussed were home-made medicines, the control of narcotic drugs, and extension of leprosariums. Home-made medicines have resulted from the economic depression. Both the premier and the minister of the interior gave instructions that governors should make strict supervision lest opium be illegally sold or imported. The extension of leprosariums was favored.

The health committee met in the home ministry, Nov. 26, 1930, and the special committee studied and discussed the drafts of the laws for controlling parasites in farming villages and the laws for controlling the sale and use of birth control drugs and apparatus. The documents were sent to the home minister after the conference.

The conference of the central hygiene council met, Dec. 8, 1930. The topics discussed were the act for the prevention of parasitism, the act for the enforcement of sanitary corporations, the amendment in the laws controlling the spread of infectious diseases and the act for the control of distribution of harmful drugs and apparatus for birth control. This legislation will be acted on during the present session of the diet.

Marriages

EDWARD FRANKEL, JR., New York, to Miss María Diaz de Villalvilla y Tornés of Greenwich, Conn., January 24.

L. C. COWEN, Rising Sun, Ind., to Mrs. Mittie Griffin of Artesia, Miss., in Miami, Fla., Dec. 9, 1930.

JOHN TRIMBLE EADS, Philadelphia, to Miss Elizabeth Jane Downs of Newark, N. J., Nov. 30, 1930.

SAM LITZENBERGER, Anderson, Ind., to Miss Frances Louise Turner of Birdsboro, Pa., Nov. 29, 1930.

HENRY W. BOPP, Terre Haute, Ind., to Miss Margaret Ruth Hutchens of Seymour, Dec. 26, 1930.

HARRY C. BEATTY, North Tonawanda, N. Y., to Miss Agnes Hall of Calhoun, Ga., Nov. 30, 1930.

JAMES W. DAVIS, Statesville, N. C., to Miss Nancy Smith of Greensboro, Dec. 10, 1930.

RALPH L. GILMAN, Hartford, Conn., to Miss Ruby Weaver, in Tarrington, Dec. 20, 1930.

FRANK W. RATCLIFF, Kingman, Ind., to Miss Mary Holt in Chalmers, Dec. 20, 1930.

HUGH D. STITES to Mrs. Ethel Morrison, both of Aledo, Ill., January 22.

Deaths

John William Draper ⊕ New York; Medical Department of the University of the City of New York, 1898; member of the American College of Surgeons and the American Gastro-Enterological Association; formerly associate in surgery, Columbia University College of Physicians and Surgeons, and associate in experimental surgery, University and Bellevue Hospital Medical College; director of the surgical research laboratory of the Mayo Clinic, Rochester, Minn., 1909-1912; attending surgeon to the State Hospital for Insane, Trenton, N. J., and the Midtown Hospital, New York; aged 59; died, January 26, in the Flower Hospital, following an operation on the gallbladder.

Edwin Welles Dwight ⊕ Boston; Harvard University Medical School, Boston, 1891; formerly instructor of legal medicine and surgery at his alma mater, and professor of legal medicine, Tufts College Medical School; on the staff of the Boston City Hospital; medical director of the New England Mutual Life Insurance Company; author of "Toxicology" and "Medical Jurisprudence"; aged 67; died, January 14.

David Harrison Rand, Portland, Ore.; Willamette University Medical Department, Salem, 1885; member of the Oregon State Medical Society; city and county coroner, 1898-1902; for more than forty years on the staff of St. Vincent's Hospital; aged 69; died, Nov. 29, 1930, in San Francisco, of uremia.

Willis E. Ford, Utica, N. Y.; Medical Department of the University of the City of New York, 1872; member of the American Climatological and Clinical Association; for many years on the staff of St. Luke's Hospital; aged 80; died, January 29, of bronchopneumonia and arteriosclerosis.

Roy Blosser ⊕ Providence, R. I.; Atlanta College of Physicians and Surgeons, 1902; Jefferson Medical College of Philadelphia, 1906; member of the New England Dermatological Society; served during the World War; aged 48; died, January 8, of illuminating gas poisoning.

Thomas Ragan ⊕ Shreveport, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1891; served during the World War; member of the American College of Surgeons; aged 64; died, January 9, of cerebral arteriosclerosis and cerebral edema.

William Hayes Brosius, Mont Alto, Pa.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; aged 70; died, Nov. 19, 1930, of chronic parenchymatous nephritis, hypertrophy of the prostate and chronic cystitis.

James F. Lemon, Dansville, Mich.; University of Michigan Medical School, Ann Arbor, 1882; formerly member of the state board of health; for twenty-five years secretary of the school board; aged 76; died, January 5, of diabetes mellitus.

Charles D. McGettigan ⊕ San Francisco; Medical Department of the University of California, 1896; veteran of the Spanish-American War; aged 57; on the staff of St. Mary's Hospital, where he died, January 23, of influenza.

Temple J. Smith, Jonesville, La.; Maryland Medical College, Baltimore, 1903; member of the Louisiana State Medical Society; aged 50; died, January 6, in the Natchez (Miss.) Sanatorium, of pneumonia, following influenza.

William David Herring, Midlothian, Texas; Baylor University College of Medicine, Dallas, 1916; member of the State Medical Association of Texas; aged 48; died, January 3, in a sanatorium at Waxahachie, Texas.

Samuel McGaughey, Indianapolis; Medical College of Indiana, Indianapolis, 1900; served during the World War; formerly county health commissioner and county coroner; aged 55; died, January 10, of heart disease.

Roswell H. Trumpour, Kirkwood, Mo.; St. Louis College of Physicians and Surgeons, 1901; member of the Missouri State Medical Association; aged 54; died, Dec. 12, 1930, in Des Peres, of pulmonary emphysema.

Susan E. Bruce, Lewiston, Idaho; Chicago Homeopathic Medical College, 1880; member of the Idaho State Medical Association; formerly member of the state and city boards of health; aged 82; died, Dec. 24, 1930.

Elisha W. Breazeale, Campti, La.; Memphis (Tenn.) Hospital Medical College, 1903; aged 61; died, January 13, in Baton Rouge, of injuries received when the automobile in which he was driving was struck by a train.

James A. Miller ⊕ McAllen, Texas; American Medical College, St. Louis, 1901; formerly member of the state board of medical examiners and state legislature in Missouri; aged 69; died, Dec. 20, 1930, of pneumonia.

George F. Kenney ⊕ Milwaukee; Milwaukee Medical College, 1906; assistant clinical professor of obstetrics and gynecology, Marquette University School of Medicine; aged 46; died, January 12, of heart disease.

Walter Dency Minigan ⊕ Manchester, N. H.; University of Pennsylvania School of Medicine, Philadelphia, 1920; aged 36; died, Dec. 20, 1930, in the Hillsboro County Hospital, Grasmere, of cirrhosis of the liver.

Walter Fenner Rochelle, Jackson, Tenn.; Vanderbilt University School of Medicine, Nashville, 1882; University of Nashville Medical Department, 1883; aged 73; died, January 9, in Bolivar, of interstitial nephritis.

Markley C. Cameron ⊕ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1885; aged 69; on the staff of the Western Pennsylvania Hospital, where he died, January 12, of lobar pneumonia.

Howard Dysart Kessler, Buffalo; Hahnemann Medical College and Hospital of Philadelphia, 1901; aged 54; died, January 10, in the Millard Fillmore Hospital, of coronary occlusion and arteriosclerosis.

Abby Dyer Allen, Hamilton, Ohio; Dunham Medical College, Chicago, 1900; Denver College of Physicians and Surgeons, 1908; aged 75; died, January 11, in the Fort Hamilton Hospital, of pneumonia.

George Washington Lawrence ⊕ Lakewood, N. J.; Yale University School of Medicine, New Haven, 1890; on the staff of the Paul Kimball Hospital; aged 61; died, January 16, of cerebral hemorrhage.

Stephen A. Foote ⊕ Houston, Texas; University of Texas School of Medicine, Galveston, 1898; formerly secretary of the Matagorda County Medical Society; aged 60; died, January 7, of coronary thrombosis.

Louis H. Davis ⊕ St. Louis; College of Physicians and Surgeons of St. Louis, 1890; aged 68; died, January 7, in St. John's Hospital, of chronic pericarditis with effusion and hypertrophy of the prostate.

John M. Jennings, Wamega, Kan.; State University of Iowa College of Medicine, Iowa City, 1872; Civil War veteran; aged 93; died suddenly, January 20, in Warsaw, Ind., of valvular heart disease.

Michael Golland, St. Louis; Missouri Medical College, St. Louis, 1895; member of the Missouri State Medical Association; aged 67; died, January 17, in the Jewish Hospital, of chronic myocarditis.

William H. Godwin, Thomas, Ala.; University of Alabama School of Medicine, Mobile, 1909; member of the Medical Association of the State of Alabama; aged 46; died, January 7, of gunshot wounds.

George Frederic Wentch, Earlville, Ill.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1896;

aged 72; died, Dec. 30, 1930, in the East Side Hospital, Waterman, of carcinoma.

Edwin Bell Marshall, Annville, Pa. (licensed, Pennsylvania, 1883); member of the Medical Society of the State of Pennsylvania; aged 76; died, January 6, in a hospital at Lebanon, of uremia.

John Moorman Johnson, Rio Hondo, Texas; Louisville (Ky.) Medical College, 1894; aged 58; died, Nov. 10, 1930, in a hospital at Harlingen, of cerebral metastasis from an intestinal neoplasm.

John Percy Bethel ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1902; served during the World War; formerly city bacteriologist; aged 51; died, January 23, of heart disease.

James Winslow Chace, Pittsburgh; University of Buffalo School of Medicine, 1885; formerly member of the school board of Corry, Pa.; aged 70; died, Dec. 18, 1930, of cerebral hemorrhage.

Edward B. Terrell, Atlanta, Ga.; University of Louisville (Ky.) School of Medicine, 1877; aged 73; died, January 12, in the Wesley Memorial Hospital, of heart disease and chronic nephritis.

Paul M. Donigan, Brookshire, Texas; University of Louisville (Ky.) School of Medicine, 1889; aged 71; died, Dec. 27, 1930, in a hospital at Houston, of carcinoma of the urinary bladder.

Theodore Clarence Harter, Bloomsburg, Pa.; College of Physicians and Surgeons, Baltimore, 1881; formerly member of the state legislature; aged 78; died, in January, of paralysis.

Charles Frederick Rinker, Upperville, Va.; Bellevue Hospital Medical College, New York, 1883; member of the Medical Society of Virginia; aged 71; died, Nov. 11, 1930, of pneumonia.

Harvey Wharton Woods, Blain, Pa.; Baltimore University School of Medicine, 1898; Maryland Medical College, 1899; aged 59; died, Dec. 13, 1930, of carcinoma of the throat.

Jefferson T. Hartly, Liverpool, W. Va.; Miami Medical College, Cincinnati, 1882; aged 78; died, Nov. 11, 1930, in Clifton Forge, of heart disease and chronic nephritis.

John K. Ross, Mishawaka, Ind.; Eclectic Medical Institute, Cincinnati, 1881; aged 85; died, January 12, of acute arthritis of the left elbow, following infection of the thumb.

Solomon R. McKay, Troy, Mo.; St. Louis Medical College, 1875; aged 76; died, January 5, in St. Anthony's Hospital, St. Louis, of arteriosclerosis and diabetes mellitus.

John Mitchell Gibson ✠ McIndoe Falls, Vt.; University of Vermont College of Medicine, Burlington, 1888; aged 68; died, Dec. 29, 1930, in Berea, Ky., of nephritis.

James A. Ward, Cordele, Ga.; Atlanta Medical College, 1891; member of the Medical Association of Georgia; aged 62; died, January 10, of cerebral hemorrhage.

William Jackson Smith, Desoto, Ga.; Kentucky School of Medicine, Louisville, 1890; member of the Medical Association of Georgia; aged 65; died, Nov. 8, 1930.

Jose Gomez Brioso ✠ San Juan, P. R.; Central University of Spain Faculty of Medicine, Madrid, 1879; aged 76; died, Oct. 17, 1930, of bronchopneumonia.

Marcus Henry Heldman, Pasadena, Calif.; University of Nashville Medical Department, 1906; aged 58; died, January 16, of a self-inflicted bullet wound.

Alexander Rae, Brooklyn; Long Island College Hospital, Brooklyn, 1885; member of the American College of Surgeons; aged 70; died, January 5.

Hugh Payne Hirst, Leetown, W. Va.; Baltimore Medical College, 1895; aged 71; died, Dec. 20, 1930, in Shepherdstown, of cerebral hemorrhage.

John B. Haines, Lima, Ohio; Fort Wayne (Ind.) College of Medicine, 1879; aged 78; died, January 3, of senile dementia and arteriosclerosis.

Tilman Johnson Robb ✠ North Fork, Ky.; University of Louisville School of Medicine, 1908; aged 49; died, January 9, of pneumonia.

Henry Lewis Gunn, Halifax, Va.; Medical College of Virginia, Richmond, 1899; aged 60; died, January 4, of pneumonia.

Bernard W. Shirey ✠ York, Pa.; College of Physicians and Surgeons, Baltimore, 1895; aged 58; died, Dec. 5, 1930, of peritonitis.

Charles J. Cragg, Detroit; Detroit College of Medicine, 1900; aged 63; died, Dec. 3, 1930, of carcinoma of the throat.

Bureau of Investigation

BRINKLEY'S BROADCASTING STATION

Appellate Court Sustains the Radio Commission

Some time ago, the Federal Radio Commission refused to renew the broadcasting license of Station KFKB of Milford, Kansas, operated by John R. Brinkley. The Commission's refusal to renew was based on the ground that the station was operated mainly in the interests of Brinkley rather than in the interests of the public. Following this decision on the part of the Federal Radio Commission, Brinkley appealed the case to the courts. On February 2, 1931, the Court of Appeals of the District of Columbia affirmed the Federal Radio Commission's position. The full text of the Appellate Court's decision follows:

In the Court of Appeals of the District of Columbia

KFKB BROADCASTING ASSOCIATION, INC., *Appellant,*
v.
FEDERAL RADIO COMMISSION. } *No. 5240*

(Before Martin, Chief Justice, and Robb and Van Orsdel, Associate Justices.)

Appeal from a decision of the Federal Radio Commission denying appellant's application for the renewal of its station license.

The station is located at Milford, Kansas, is operating on a frequency of 1050 kilocycles with 5,000 watts power, and is known by the call letters KFKB. The station was first licensed by the Secretary of Commerce on September 20, 1923, in the name of the Brinkley-Jones Hospital Association, and intermittently operated until June 3, 1925. On October 23, 1926, it was relicensed to Dr. J. R. Brinkley with the same call letters and continued to be so licensed until November 26, 1929, when an assignment was made to appellant corporation.

On March 20, 1930, appellant filed its application for renewal of license (*Radio Act of 1927, c. 169, 44 Stat. 1162; U. S. C. Supp. III, Tit. 47, Sec. 81, et seq.*). The Commission, failing to find that public interest, convenience or necessity would be served thereby, accorded appellant opportunity to be heard. Hearings were had on May 21, 22, and 23, 1930, at which appellant appeared by counsel and introduced evidence on the question whether the granting of the application would be in the public interest, convenience or necessity. Evidence also was introduced in behalf of the Commission. Upon consideration of the evidence and arguments, the Commission found that public interest, convenience, or necessity would not be served by granting the application and, therefore, ordered that it be denied, effective June 13, 1930. A stay order was allowed by this Court, and appellant has since been operating thereunder.

The evidence tends to show that Dr. J. R. Brinkley established station KFKB, the Brinkley Hospital, and the Brinkley Pharmaceutical Association, and that these institutions are operated in a common interest. While the record shows that only three of the 1,000 shares of the capital stock of appellant are in Dr. Brinkley's name and that his wife owns 381 shares, it is quite apparent that the Doctor actually dictates and controls the policy of the station. The Brinkley Hospital, located at Milford, is advertised over Station KFKB. For this advertising the hospital pays the Station from $5,000 to $7,000 per month.

The Brinkley Pharmaceutical Association, formed by Dr. Brinkley, is composed of druggists who dispense to the public medical preparations prepared according to formulas of Dr. Brinkley and known to the public only by numerical designations. Members of the Association pay a fee upon each sale of certain of those preparations. The amounts thus received are paid the Station, presumably for advertising the preparations. It appears that the income of the Station for the period February, March, and April, 1930, was as follows:

Brinkley Pharmaceutical Association	$27,856.40
Brinkley Hospital	6,500.00
All other sources	3,544.93
Total	$37,901.33

Dr. Brinkley personally broadcasts during three one-half hour periods daily over the station, the broadcast being referred to as

the "Medical Question Box," and is devoted to diagnosing and prescribing treatment of cases from symptoms given in letters addressed either to Dr. Brinkley or to the Station. Patients are not known to the Doctor except by means of their letters, each letter containing a code signature, which is used in making answer through the broadcasting station. The Doctor usually advises that the writer of the letter is suffering from a certain ailment, and recommends the procurement from one of the members of the Brinkley Pharmaceutical Association, of one or more of Dr. Brinkley's prescriptions, designated by numbers. In Dr. Brinkley's broadcast for April 1, 1930, presumably representative of all, he prescribed for forty-four different patients and in all, save ten, he advised the procurement of from one to four of his own prescriptions. We reproduce two as typical:

> "Here's one from Tillie. She says she had an operation, had some trouble 10 years ago. I think the operation was unnecessary, and it isn't very good sense to have an ovary removed with the expectation of motherhood resulting therefrom. My advice to you is to use Women's Tonic No. 50, 67 and 61. This combination will do for you what you desire if any combination will, after three months persistent use.
>
> "Sunflower State, from Dresden, Kans. Probably he has gall stones. No, I don't mean that, I mean kidney stones. My advice to you is to put him on Prescription No. 80 and 50 for men, also 64. I think that he will be a whole lot better. Also drink a lot of water."

In its "Facts and Grounds for Decision," the Commission held "that the practice of a physician's prescribing treatment for a patient whom he has never seen, and bases his diagnosis upon what symptoms may be recited by the patient in a letter addressed to him, is inimical to the public health and safety, and for that reason is not in the public interest"; that "the testimony in this case shows conclusively that the operation of Station KFKB is conducted only in the personal interest of Dr. John R. Brinkley. While it is to be expected that a licensee of a radio broadcasting station will receive some remuneration for serving the public with radio programs, at the same time the interest of the listening public is paramount, and may not be subordinated to the interests of the station licensee."

This being an application for the renewal of a license, the burden is upon the applicant to establish that such renewal would be in the public interest, convenience, or necessity *(Technical Radio Lab. v. Fed. Radio Comm., — App. D. C. —, 36 F. (2d) 111, 114; Campbell v. Galeno Chem. Co., 281 U. S. 599, 609)*, and the court will sustain the findings of fact of the Commission unless "manifestly against the evidence" *(Ansley v. Fed. Radio Comm., No. 5149, decided this term, — App. D. C. —, — F. (2d.))*.

We have held that the business of broadcasting, being a species of interstate commerce, is subject to the reasonable regulation of Congress. *(Technical Radio Lab. v. Fed. Radio Comm., — App. D. C. —, 36 F. (2d) 111; City of New York v. Fed. Radio Comm., — App. D. C. —, 36 F. (2d) 115; Chicago Federation of Labor v. Fed. Radio Comm., — App. D. C. — , 41 F. (2d) 422.)* It is apparent, we think, that the business is impressed with a public interest and that, because the number of available broadcasting frequencies is limited, the Commission is necessarily called upon to consider the character and quality of the service to be rendered. In considering an application for a renewal of the license, an important consideration is the past conduct of the applicant, for "by their fruits ye shall know them." *Matt. VII: 20.* Especially is this true in a case like the present, where the evidence clearly justifies the conclusion that the future conduct of the station will not differ from the past.

In its Second Annual Report (1928), p. 169, the Commission cautioned broadcasters "who consume much of the valuable time allotted to them under their licenses in matters of a distinctly private nature which are not only uninteresting, but also distasteful to the listening public." When Congress provided that the question whether a license should be issued or renewed should be dependent upon a finding of public interest, convenience, or necessity, it very evidently had in mind that broadcasting should not be a mere adjunct of a particular business but should be of a public character. Obviously, there is no room in the broadcast band for every business or school of thought.

In the present case, while the evidence shows that much of appellant's programs is entertaining and unobjectionable in character, the finding of the Commission that the station "is conducted only in the personal interest of Dr. John R. Brinkley" is not "manifestly against the evidence." We are further of the view that there is substantial evidence in support of the finding of the Commission that the "medical question box" as conducted by Dr. Brinkley "is inimical to the public health and safety, and for that reason is not in the public interest."

Appellant contends that the attitude of the Commission amounts to a censorship of the station contrary to the provisions of Sec. 29 of the Radio Act of 1927. This contention is without merit. There has been no attempt on the part of the Commission to subject any part of appellant's broadcasting matter to scrutiny prior to its release. In considering the question whether the public interest, convenience, or necessity will be served by a renewal of appellant's license, the Commission has merely exercised its undoubted right to take note of appellant's past conduct, which is not censorship.

As already indicated, Congress has imposed upon the Commission the administrative function of determining whether or not a station license should be renewed, and the Commission in the present case has in the exercise of judgment and discretion ruled against the applicant. We are asked upon the record and evidence before the Commission to substitute our judgment and discretion for that of the Commission. While Sec. 16 of the Radio Act of 1927 *(44 Stat. 1162, 1169; U. S. C., Supp. III, Tit. 47, sec. 96)* authorized an appeal to this Court, we do not think it was the intent of Congress we should disturb the action of the Commission in a case like the present. Support is found for this view in the Act of July 1, 1930 *(46 Stat. 844)*, amending Sec. 16 of the 1927 Act. The amendment specifically provides "that the review by the court shall be limited to questions of law and that findings of fact by the commission, if supported by substantial evidence, shall be conclusive unless it shall clearly appear that the findings of the commission are arbitrary or capricious." As to the interpretation that should be placed upon such provision, see Ma-King v. Blair, 271 U. S. 479, 483.

We are therefore constrained, upon a careful review of the record, to affirm the decision.

Affirmed. CHAS. H. ROBB, Associate Justice.

ENDORSED: No. 5240. KFKB Broadcasting Association, Inc., Appellant, v. Federal Radio Commission, Appellee. Opinion of the Court per Mr. Justice Robb. Court of Appeals. District of Columbia. Filed February 2, 1931. Henry W. Hodges, Clerk.

Correspondence

NATIONAL ADJUSTING ASSOCIATION

To the Editor:—In the fall of 1928, a representative of the National Adjusting Association, 208 West Washington Street, Chicago, called on me, and by the most unscrupulous canvass ever inflicted on me induced me to give him a list of slow accounts amounting to $6,000. I was to have monthly reports and checks with each. To my surprise, they got money from most unexpected sources—but the last check I received was May 9, 1929. I have persistently demanded an accounting from time to time, since, without effect. They dodge the issue by some demand or proposal which is necessary before they can act, and so they dangle along, evading a report.

I have written the Department of Law Enforcement in Boise to see if these people are legally qualified since 1928 to operate in this state, and I believe it would be well to give this matter a little publicity through THE JOURNAL. I am convinced the medical profession would much rather allow their earnings to remain in the hands of their clientele—even though that clientele neglects its duty—than to turn it into less worthy channels.

C. F. MAGEE, M.D., Moscow, Idaho.

[COMMENT.—The National Adjusting Association was one of the organizations that was given some publicity in the Bureau of Investigation department of THE JOURNAL, June 10, 1922. Since that time, we have had many additional complaints regarding the concern's methods, some of which have been only partially justified, while others seem to have been well justified. The company, so far as we know, keeps within the terms of

its contract, but the contract itself is an inequitable one that seems to be made almost wholly in the interests of the collection agency, rather than equally in the interests of the agency and its client. While Dr. Magee *understood* that he was to have monthly reports and remittances from the collection agency, the National Adjusting Association's contracts that we have seen says nothing about such monthly reports. It does say that the *physician* must immediately report to the collection agency and send its share of payments made directly to the physician. But there is nothing in the contract requiring the agency itself to write to the doctor until it gets ready.—ED.]

ROBISON NATIONAL CLEARING AND WORLD WIDE ADJUSTING COMPANIES

To the Editor:—I was interested in your article on the Robison National Clearing Company of Albany, N. Y. I have had a little experience with this company and believe that you should know about these things. In February, 1930, a representative of the World Wide Adjusting Company (a subsidiary of the Robison National Clearing Company) called at my office and asked that I give him some of my bad accounts, stating that his company was going to compile a book of Lagrange County, listing all "dead beats," whom they owed, etc. He stated that every one who turned over any accounts to him would secure one of these books. He canvassed business houses in town, telling the same story. He had a booklet, which he showed me, on another county, similar, he said, to the one to be prepared on Lagrange County.

Being new and unacquainted in this community, I gave him a few bad accounts, because I felt that this proposed booklet might be of some use to me. Two of the claims I turned over were not to be pressed until further word from me. A few weeks later I received a notice from this company, stating they were pressing my claims, including these two. I wrote telling of the understanding with their representative and received their reply of April 4. On August 1, I wrote asking about the listing book and received their reply of August 7.

I have no particular grievance with them. They have done me neither good nor harm, but I thought you might be interested in knowing these things. You will note that while the address is the same, the name is different from the company on which you published. FRANK J. KENDRICK, M.D., Lagrange, Ind.

[EDITORIAL COMMENT.—Dr. Kendrick enclosed with his communication some letters received from the World Wide Adjusting Company (which also seems to go under the name of World Wide Adjusting Association, Inc.). With reference to the two claims that the doctor had stated should not be pushed, the company agreed to discontinue further action on them. As to the complaint of Dr. Kendrick, that the listing book had not been received: The company wrote that it published no such book, that it was in the collection business only, and expressed the opinion that its representative might be "carrying such a proposition as a side-line." A later letter from the company, following the doctor's further protest, brought the statement that they were checking up the matter with their representative and, in the meantime, would withhold further service on the doctor's claims. The company also stated in this letter that it was a subsidiary of the Robison National Clearing Company of the same address. Finally, in a letter dated December 16, the World Wide Adjusting Company wrote, in effect, that the investigation had shown that their agent had made representations that were unjustified and, for that reason, the company was closing its files and making no further attempt to collect the doctor's accounts. The information was added that the company's representative in this case was one R. E. House and not the man Rosenkrans, whose methods were discussed in THE JOURNAL'S article on the Robison National Clearing Company.]

To the Editor:—I have had an experience with the Robison National Clearing Company of Albany, N. Y., very similar to that of Dr. E. O. Price of Ladoga, Ind. Last March a Mr. P. T. Rosenkans, representing the above-named company, called on me and represented that they were getting up a credit book and wanted a list of my delinquent accounts, offering to collect them for 50 per cent of the first $100 collected and 15 per cent of all after the first hundred. He said that I did not have to sign any contract and that I would receive a credit book in due time with a rating of people in Tippecanoe and adjoining counties. I did not sign any contract. In a few days I received two lists from the company at Albany, asking me to look them over, correct any errors, sign one and retain the other.

I sent them a telegram telling them the list was not correct and not to proceed with any collections. It seems that they sent their first notice to my accounts at the same time they mailed me the lists. A few people came to my office and paid me and I sent the commission agreed with Mr. Rosenkans, telling them I was sending the commission because they had apparently sent the notice before they received my telegram.

They have failed to send me any money they have collected. Have been very offensive to my patients, threatening suits and attachments on their furniture, autos, etc. I have repeatedly ordered them to stop but they have refused, saying I had signed a contract assigning the accounts to them. They finally sent to Battle Ground State Bank what they said was a contract signed by me. This was a rank forgery, as the president and other officers of the bank are willing to testify to. They still refuse to send me any money they have collected. They are still threatening some of my patients with suits.

FRANK M. BIDDLE, M.D., Battle Ground, Ind.

To the Editor:—I have read with interest the article on the experience of an Indiana physician with the Robison National Clearing Company, Inc., appearing in the Bureau of Investigation Department of THE JOURNAL, December 13. About four or five years ago, in a weak moment, I contracted with them to collect around a thousand odd dollars' worth of accounts. To date, in spite of repeated attempts, I have been unable to collect one single cent from them, although, on their own admission, they have made several collections. I have had a somewhat similar experience with the United States National Adjustment Company of Chicago.

H. F. W. WARDEN, M.D., Detroit.

ADENOCARCINOMA OF THE HEAD OF THE PANCREAS

To the Editor:—I have read with great interest the article by Dr. Elmer Hess on this subject in THE JOURNAL, January 3. Dr. Hess is to be commended for calling attention to the difficulties of diagnosis of lesions in the region of the head of the pancreas.

I wish to call attention to several diagnostic aids which have been found useful in a consideration of these lesions. The duodenum has approximately the same shape as that of a horseshoe magnet, the pyloric end of the stomach forming the bar between the poles of the magnet. A tumor mass within the loop tends to expand the latter, often to such an extent that the horseshoe becomes a circle. Clarence Bird has emphasized the value of repeated series of roentgenograms over a period of time. Any expansion is suggestive of a growing tumor mass within the duodenal loop. This expansion can be conveniently detected by a suitable technic measuring vertical and horizontal inside diameters on the roentgenogram. Contour tracings can also be made and compared.

Carcinoma of the pancreas may invade the duodenum. In the early stages of the process, the filling defects so produced are evanescent and difficult to detect. Roentgenograms therefore are quite essential to supplement the radioscopic observations.

JOHN R. CARTY, M.D., New York.
Chief of Clinic, Department of X-Ray,
Cornell University Medical College.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

INDICATIONS FOR AND TECHNIC OF CISTERNAL PUNCTURE

To the Editor:—Please describe the technic of doing a cisternal puncture in order to obtain a specimen of cerebrospinal fluid. Is there any danger of performing routine cisternal punctures instead of lumbar spinal punctures? Please omit name and address. M.D., North Dakota.

ANSWER.—The technic of doing a cisternal puncture is adequately described in Ayer's article in the *Archives of Neurology and Psychiatry* **4**:529 (Nov.) 1920. In brief, the hair of the back of the neck is shaved to the external occipital protuberance. The area in the midline from this point to the second cervical spine is painted with iodine. The patient is in a position so that his head is on a straight line with his cervical spine. The neck is flexed anteriorly about 20 degrees. The thumb of the left hand palpates and finds the midline in the area between the external occipital protuberance and the spine of the second vertebra. The needle is inserted inward at an angle so that it points in a line between the external auditory meatus and the glabella. The needle should never be inserted more than 6 cm. It passes through the subcutaneous tissue and the musculature, and strikes the firm resistant occipitoatlantoid ligament. It takes considerable pressure to pass through this portion of the dura and care must be exerted that the needle is not pushed too far anteriorly by the force that is required to penetrate the dura. Difficulties in obtaining fluid are usually due to being outside the midline or not directing the needle in the proper direction. Anomalous veins sometimes give rise to bleeding and when this occurs no further puncture should be done in the cisternal region. Routine cisternal puncture should not be done instead of lumbar punctures, as there is some danger to the former and certain deaths have been described actually due to the puncture, whereas lumbar spinal punctures are entirely free from danger when contraindications to withdrawal of fluid do not exist.

TREATMENT OF SYPHILIS—ADVICE TO SYPHILITIC PATIENT CONCERNING MARRIAGE—LAWS REGULATING MARRIAGE

To the Editor:—I have a patient whose diagnosis was primary syphilis (chancre) diagnosed by clinical observations and by the dark field. He received six intravenous injections of neoarsphenamine and nine intramuscular injections of bismuth. If his Wassermann reaction should be negative would you repeat the same course of treatment for two years? The Army Manual directs the giving of mercurial treatment only if the first Wassermann reaction is negative and a return to the intravenous treatment if the Wassermann reaction is positive. 1. Do many other authorities agree with directions given in this manual on venereal diseases? 2. How long would you have the patient wait after the primary lesions have healed up to get married? 3. What states in the Union require a medical examination before obtaining a marriage license? What states require this examination only from the man and what states require the same examination of both sexes?

WILLIAM FRANKMAN, M.D., Boston.

ANSWER.—1 and 2. The directions given by the Army Manual are derived from teachings of prominent syphilologists and may therefore be considered authoritative. It is the consensus that an individual has to be free from all syphilitic symptoms for at least one year before marriage should be contemplated. The patient must not only be free from all symptoms to be discovered by clinical examinations but also be tested by serologic examinations, which includes the testing of the spinal fluid.

3. No American state requires a prospective bride to furnish a medical certificate showing that she has been examined and found free from venereal disease. Seven states require such examinations and certificates from prospective bridegrooms; namely, Alabama, Louisiana, North Carolina, North Dakota, Oregon, Wisconsin and Wyoming.

The marriage of a person who has a contagious venereal disease is forbidden in Delaware, Indiana, Maine, Michigan, Nebraska, New Jersey, Oklahoma, Pennsylvania, Utah, Vermont, Virginia and Washington. We are not informed, however, as to the method of enforcing compliance with the several statutes of the states named, except that the laws of Pennsylvania require an application for a marriage license to contain a statement showing that neither party has a transmissible disease.

In New Jersey, it is unlawful for any person who has been confined in any public asylum or institution as an epileptic, insane or feebleminded person to intermarry without a certificate from two regularly licensed physicians of New Jersey, that such person has been completely cured of such insanity, epilepsy or feeblemindedness, and that there is no probability that such person will transmit any such defect or disability to the issue of such marriage.

The marriage of epileptic persons is forbidden in Delaware, Indiana, Kansas, Minnesota, Missouri, North Dakota, Ohio, Utah, Virginia and Washington. We are not informed as to the method of insuring compliance with these statutes.

The laws of Pennsylvania require that an application for a marriage license contain a statement showing that neither party has a transmissible disease. This seems to be broad enough to cover venereal diseases in their communicable stages, hemophilia, and transmissible disorders of the nervous system.

OBSTETRIC DEATHS IN AND OUT OF HOSPITAL

To the Editor:—In a recent discussion with physicians from rural communities, there was a difference of opinion as to the percentage of deaths in obstetric cases in and outside of hospitals. For my own information and to settle the argument, I should like figures concerning the death rate in these cases, both in hospitals and out of hospitals. Also an opinion as to why the difference in death rate in such cases.

REV. LEWIS D. HOPPER, Peoria, Ill.

ANSWER.—There is little direct evidence in the literature bearing on the question of the percentage of deaths in obstetric cases in and outside of hospitals. There are no figures that pertain to the country as a whole. This question was taken under consideration by a subcommittee of Section I of the White House Conference on Child Health and Protection, which recently met in Washington, D. C., and the report of the subcommittee stated that: "There is not much available material on this subject, as bureaus of vital statistics do not usually classify maternal deaths according to the place of delivery. Figures secured from California for 1929, however, show that the rate was practically the same for hospital and home deliveries. This is a very good showing for the hospitals, in view of the fact that they receive a large proportion of complicated and difficult cases."

An article published in THE JOURNAL, Nov. 9, 1929, by Holmes, Mussey and Adair included a study of maternal deaths made by the Minneapolis Infant Welfare Society following home and hospital deliveries during the years 1925 to 1928, inclusive. There was a total of 35,583 living births during the period studied, of which 24.2 per cent took place in homes and among these the death rate per thousand was 3.4. Of the total number of living births, 75.8 per cent took place in hospitals and among these the maternal death rate per thousand was 3.9.

Frankel, in a pamphlet published in 1927 by the Metropolitan Life Insurance Company, on "The Present Status of Maternal and Infant Hygiene in the United States," said that some five years ago Dr. Julius Levy made a study of maternal mortality among cases attended in the homes by midwives and compared them with all the cases attended in Newark, N. J., during the period 1916 to 1921. On cases ever handled by a midwife, there occurred 1.5 maternal deaths per thousand births and for the whole city, including the midwife cases, the rate was 4.3 per thousand births. Frankel said it is interesting to inquire whether this favorable record was due to attendance of midwives or to the fact that the deliveries took place in the home, and presumably without undue meddling or tampering.

BREEDING OF MOSQUITOES

To the Editor:—1. Do not the majority of mosquitoes that infest the seacoast breed in salt water, or brackish water, caused by the tides and swamps? 2. Is it possible that the anopheles may breed in brackish water? 3. What species of mosquitoes breed in salt water and in brackish water? Kindly omit my name. M.D., South Carolina.

ANSWER.—1. The percentage of species of mosquitoes that breed in brackish water along the seacoast varies greatly in different parts of the world. In many places, however, a large proportion of the mosquitoes along the coast breed in brackish water. An example of this is found in the salt marsh mosquitoes of New Jersey.

2. A number of anophelines breed in brackish and a few in sea water. In the United States, according to Griffitts,

Anopheles crucians will breed in 50 per cent sea water and *A. quadrimaculatus* in 1.5 per cent sea water. In parts of Porto Rico tidal swamps are of great importance in the breeding of *A. albimanus* and in the control of malaria.

3. It is impossible to list all of the known salt-water breeders. In the United States, besides the anophelines listed in 2, the best known are *Aedes sollicitans*, *A. taeniorhynchus* and *A. cantator*. The whole question of the effect of salinity on mosquito breeding is attracting considerable attention and future work will probably uncover a number of instances in which species thought to breed only in fresh water will be found to breed also in brackish water.

STAPHYLOCOCCI IN BLOOD CULTURES

To the Editor:—What are the clinical conditions that would tend to be confirmed by the isolation of staphylococci in hemoculture? If staphylococci are found on hemoculture, is a person justified in regarding them as contaminants due to faulty technic, unless there is some clinically recognizable localized septic process? Please omit name.

M.D., Idaho.

ANSWER.—The mere demonstration of the presence of staphylococci in a blood culture without determination of the virulence of such organisms is of little value. There is no sure way of differentiating staphylococci that may be contaminations from the skin from those that invade the blood stream in septic infections, other than the virulence test in suitable animals. Intravenous injection into rabbits is perhaps the best method of determining virulence or specific invasive power of staphylococci which may appear in blood cultures.

TREATMENT OF CONGENITAL SYPHILIS

To the Editor:—A girl, aged 6 years, with congenital syphilis, first came to me for treatment at the age of 5. She had had in early infancy a brief course of antisyphilitic therapy, at which time she had a chronic suppurative cervical lymphadenitis. The physician who treated the lymphadenitis stated that the cervical glands were probably syphilitic, as they had discharged for a long time and healed only after antisyphilitic therapy had been instituted. I do not know how much treatment she had in infancy but she had had no treatment for several years previous to coming to me. Physical examination was negative except for malnutrition (weight 35 pounds, or 16 Kg.), hypertrophied, infected tonsils and adenoids, but no other stigmas of syphilis. The child seemed normal mentally, and a neurologic examination was negative. The blood Wassermann reaction was 4 plus and has remained so since. I have given the following treatment over a period of fifteen months:

8- 3-29— 9-31-29..	Sulpharsphenamine intramuscularly, 5 injections, 12 Gm.	1 per cent mercuric chloride intramuscularly, 5 injections, 0.5 cc.
10- 8-29— 1- 4-30..	Sulpharsphenamine, 4 injections, 0.2 Gm.	Mercuric salicylate, 12 injections, 35/100-4/10 grain
2-15-30— 5-10-30..	6 injections, 0.2 Gm.	12 injections, 4/10-45/100 grain
7-12-30— 8- 9-30..	5 injections, 0.2 Gm.	5 injections, 45/100 grain
9-13-30—11-15-30..	10 injections, 0.2 Gm.	10 injections, 45/100 grain

The total treatment over a period of fifteen months was: sulpharsphenamine, thirty injections, 0.2 Gm. each; 1 per cent mercuric chloride, five injections, 0.5 cc. each; mercuric salicylate, thirty-nine injections, 35/100-45/100 grain each. The child has remained well except for minor colds and chickenpox and seems normal except for failure to gain (her weight now is only 36 pounds, or 16.3 Kg.), which I ascribe as much to the infected tonsils and adenoids as to the syphilis. Is the treatment I have described adequate or inadequate? In another month I plan to start the patient on a course of ten weekly injections of sulpharsphenamine, 0.3 Gm. each, followed immediately by ten weekly injections of bismuth subsalicylate, 0.4 Gm. each; then a vacation of one or two months followed by a repetition of this course, and so on. Does such a program, alternating mercury, sulpharsphenamine and bismuth appear to you to be adequate? What do you think of the use of potassium iodide? I feel that it is indicated but do not know when, how often or how much to use. It seems to me that the chances of getting the patient Wassermann negative after so long a period of neglect are not especially good. If, after another year of treatment, the Wassermann reaction is still positive, how should I proceed? If the Wassermann remains positive but the child remains well, how am I to judge as to the adequacy of my treatment? In such a case must treatment be continued indefinitely at (*a*) short intervals or (*b*) at long intervals? Please omit name.

M.D., Ohio.

ANSWER.—The main facts in this child's case are these: The first evidence of her syphilitic infection took the form of a Vignolo-Luttati syndrome, which always raises the question of intercurrent tuberculosis as well as gummatous syphilis. She shows definite evidence that she is carrying the handicap of a chronic intercurrent infection in the form of the hypertrophied infected tonsils and adenoids. She has a strongly positive blood Wassermann reaction that has resisted quite energetic treatment. She is still within the interstitial keratitis period in the life history of a prenatal syphilitic infection, and the possibility of this complication, whether with or without treatment, must be constantly kept in mind. While she is normal to neurologic examination, asymptomatic neurosyphilis can occur and not infrequently does in prenatally infected children, and for that reason a spinal fluid examination is a necessary part of any investigation for the explanation of the persistent positive blood Wassermann reaction. It is suggested, therefore, that since the amount of treatment already received is probably sufficient to protect against any gummatous accident, the handicap of the infected hypertrophied tonsils and adenoids be removed at the earliest possible date. This will, in all probability, favorably influence the child's nutrition and general state of health. It seems essential, also, to have a spinal fluid examination at some time in the not too distant future and this might conceivably be done during the general anesthesia employed for the removal of the tonsils, though the possibility of stirring up a focal infection and transferring what might be a shower of organisms in the blood stream to the meninges makes it, perhaps, rather more desirable to do the lumbar puncture as an entirely separate procedure.

With regard to the continuance of treatment, there is probably no further need for mercury for it has been quite clearly shown that bismuth compounds and an arsphenamine are all that is needed for the effective management of latent prenatal syphilis. It seems possible that the blood Wassermann reaction will not reverse in this case under any form of treatment, and such reversal should not be made so much of an object that the child is kept under too prolonged or too intensive a regimen. Another year of alternating sulpharsphenamine and bismuth would justify a rest period of several years while the child is kept under observation, all this provided the spinal fluid examination is completely negative to all four of the conventional tests. The adequacy of treatment in such a case must be gaged by general constitutional response even more than by serologic reaction. It must be remembered, too, that it has not yet been clearly shown that even the most energetic modern treatment is able absolutely to insure against the onset, in the coming years of this child's life, of a severe attack of interstitial keratitis. It is essential, therefore, to hold a certain amount of treatment tolerance in reserve to deal with such a situation in case it arises. There are, of course, objections to the use of sulpharsphenamine, particularly the tendency, markedly greater than that of other arsphenamines, to induce exfoliative dermatitis. Bismuth arsphenamine sulphonate or bismuth alone will give quite satisfactory results with less risk on this score. Potassium iodide is always indicated in prenatal syphilitic infection, the dose being moderate, from 0.65 to 1.3 Gm. (10 to 20 grains) three times a day, given preferably during rest periods from other treatment.

MILD MERCUROUS CHLORIDE SUSPENDED IN LIQUID

To the Editor:—After examining a patient and making a diagnosis I prescribed:

		Gm. or Cc.
℞	Tincture of belladonna	6
	Calomel (O. K. to fill)	2
	Sodium salicylate	12
	Aromatic fluidglycerate of cascara sag. ada	sufficient to make 120

M. Sig.: Teaspoonful every three hours in water.

In an hour I received a phone call from the local druggist in reference to the dose of calomel. I advised him that the dose was what I wanted and thought was indicated in this case — in fact, even labeled prescription to that effect in order to relieve him of any responsibility. However, he insisted that 1 grain was an overdose for every three hours (practically 5 grains per diem) and would not fill it. So I advised him to return the prescription to the patient that he might have it filled somewhere else. It was filled by another pharmacist without question. The medicine was continued for two days. The patient is entirely well and contented. I would like to know what is wrong with a dose of 1 grain of calomel when U. S. P. Cathartic pills contain 1 grain and can be bought anywhere and used at random.

M. K., M.D., Chicago.

ANSWER.—Prescribing such a heavy insoluble substance as mild mercurous chloride in liquid dosage form is undesirable, because of necessary inequality of dosage. Even if the mixture is shaken each time before taking, the mild mercurous chloride will settle so rapidly that the last doses will contain much more of it than the first. Nevertheless, even if the 2 Gm. contained in the mixture were taken at one time, the patient having refrained from shaking the bottle, no dire result would have followed, unless an intestinal obstruction was present. In such a case, mercurial poisoning might have resulted. The pharmacist was within his legal right in refusing to fill a prescription that

he considered potentially dangerous; for, in spite of the physician's insistence that the dosage was as intended, the pharmacist would have been held legally responsible with the physician in case harm resulted from the medicine. The pharmacist who filled the prescription took a risk, even though a slight one.

TREATMENT OF ECZEMA OF EXTERNAL EAR

To the Editor:—Kindly inform me regarding the treatment of chronic eczema of the external ear canal. The patient's present ailment is of one and one-half years' duration, and it is very annoying because of severe itching and pains at times. Would quartz light treatments benefit this condition? His tonsils seem to be infected. Would tonsillectomy be necessary besides the usual local treatments? Please omit name and address.

M.D., New Jersey.

ANSWER.—Before making local applications to the ear canal, it should be cleansed with a swab dipped in oil or liquid petrolatum. Then, once or twice a day, the following should be applied:

	Gm. or Cc.	
Rectified oil of birch tar, N. F.	1 6	gr. xxv
Resorcinol	0 8	gr. xiii
Liquid petrolatum.....to make	16 0	ʒ ss

This should relieve the itching and gradually clear up the chronic inflammation.

Ultraviolet radiation is difficult to apply in the ear canal. X-rays, one-half skin unit filtered through 1 mm. of aluminum, can be given once a week and are often successful in relieving the itching and causing resolution of the condition. They should be given through an opening in a sheet lead mask, so that only the skin immediately around the opening of the canal is exposed, and should not be continued after relief is obtained, nor after eight treatments as outlined have been given.

The tonsils would have only an indirect influence on this eczema, through their effect on the general health.

USE OF METHENAMINE AND SODIUM ACID PHOSPHATE

To the Editor:—Many of the drug concerns market a tablet consisting of methanamine and sodium acid phosphate in varying amounts. They state that the drug should be taken in water. "Useful Drugs" states that the two "should not be prescribed in solution." The coming of methenamine and sodium acid phosphate in tablet form makes the medication easier for the patient, but because of the foregoing statement I should like to know whether this combination taken in solution is proper. Please omit name and address.

M.D., New York.

ANSWER.—There is really no serious incompatibility if methenamine and sodium acid phosphate are prescribed in a relatively fresh solution. Prescribing them separately in tablet form is, on the whole, still better. According to "Useful Drugs," the acid phosphate should preferably be given long enough in advance of the methenamine so that it will have left the stomach before the latter is administered. Sodium acid phosphate should be administered preferably as a separate prescription, until the urine is acid. If the urine is maintained acid, there is no need of constant dosing with sodium acid phosphate while the methenamine is being taken.

OSTELIN—PROGNOSIS IN PAGET'S DISEASE

To the Editor:—What is the prognosis and treatment for Paget's disease of the bones? Is the ultraviolet ray of use? In London they use a remedy called "Ostelin" which they think of value. Can you tell me where it can be obtained? Please omit name and address.

M.D., Maine.

ANSWER.—Ostelin is marketed in Great Britain as a cod liver oil concentrate. A reference to Ostelin appears in the *Lancet*, Sept. 3, 1927, page 508. No examination of Ostelin has been made by the Council on Pharmacy and Chemistry. The following cod liver oil concentrates have been accepted by the Council: Oscodal, White's Cod Liver Oil Concentrate, and McKesson's Vitamin Concentrate of Cod Liver Oil.

The prognosis in Paget's disease is very poor. The treatment for Paget's disease is unknown. Ultraviolet rays may be of benefit in reducing the rheumatic symptoms and maintaining tonicity of the muscles.

DANGERS OF GUAIASODIDE INTRAVENOUSLY

To the Editor:—Two weeks ago, for five days, I gave a patient who had bronchial asthma one 20 cc. ampule daily of Guaiasodide (Breon), which contains sodium iodide, 32 Gm.; guaiacol, 0.625 Gm.; creosote, 0.625 Gm., and dextrose, 37 Gm. A week ago the patient developed a phlebitis in both arms which has continued to become worse. Was the solution irritating to the veins and did this account for the phlebitis?

JAMES ANDREW, M.D., Cordova, Ala.

ANSWER.—Evidently.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 3, 1931. Sec., Dr. Harry C. De Vighne, Juneau, Alaska.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination in nineteen cities in the United States and Canada. March 14, 1931. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

CALIFORNIA: Reciprocity, San Francisco and Los Angeles, March 18, 1931. Sec., Dr. C. B. Pinkham, 420 State Office Bldg., Sacramento, Calif.

CONNECTICUT: Homeopathic, New Haven, March 10, 1931. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven, Conn.

NEW HAMPSHIRE: Concord, March 12-13, 1931. Sec., Dr. Charles Duncan, Concord, N. H.

OKLAHOMA: Oklahoma City, March 10-11, 1931. Sec., Dr. J. M. Byrum, Shawnee, Okla.

PORTO RICO: San Juan, March 3, 1931. Sec., Dr. Diego Biascoechea, Box 804, San Juan, P. R.

WISCONSIN: Madison, March 21, 1931. Basic Science. Sec., Prof. R. N. Bauer, 3414 W. Wisconsin Ave., Milwaukee, Wis.

New Hampshire September Examination

Dr. Charles Duncan, secretary of the State Medical Board of New Hampshire, reports the oral, written and practical examination held at Concord, Sept. 11-12, 1930. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. The following college was represented:

College	PASSED	Year Grad.	Per Cent
Harvard University Medical School		(1925)	81

Dr. Duncan also reports 12 physicians licensed through reciprocity with other states and 2 by the endorsement of credentials at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
State University of Iowa College of Medicine		(1923)	Iowa
Medical School of Maine		(1891)	Maine
Boston University School of Medicine		(1890)	Arkansas
Tufts College Medical School		(1929, 2)	Mass.
Bellevue Hospital Medical College		(1897)	New York
University of Pennsylvania School of Medicine		(1929)	Vermont
University of Vermont College of Medicine		(1929, 4)	Vermont
Medical College of Virginia		(1916)	Virginia

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
Harvard University Medical School		(1927) (1929)	N. B. M. Ex.

Washington July Examination

Mr. Charles Maybury, director of the Department of Licenses of Washington, reports the written examination held at Seattle, July 14, 1930. The examination covered 8 subjects and included 80 questions. An average of 60 per cent in each subject was required to pass. Twenty-five candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1928) (1930)	74, 74, 74, 76, 83
Rush Medical College		(1923) 80, (1927)	75, (1930) 79
University of Illinois College of Medicine		(1908)	68
St. Louis University School of Medicine		(1929)	76
Washington University School of Medicine		(1929)	75
University of Nebraska College of Med.		(1929) 73, 76, (1930)	75, 77
University of Oregon Medical School		(1929)	75, 76
Marquette University School of Medicine		(1929)	74
McGill University Faculty of Medicine		(1920) 80, (1925)	71
University of Manitoba Faculty of Med.		(1926) 77, (1929)	80
Charles University Faculty of Medicine, Prague		(1928)	75
Licentiate of the Royal College of P. and S., Scotland		(1893)	66

Mr. Maybury also reports 24 physicians licensed through reciprocity with other states and 4 by the endorsement of credentials at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1920)	California
Northwestern University Medical School		(1912) (1914)	Wisconsin Missouri
Rush Medical College		(1920) Montana, (1928), (1929)	California
State University of Iowa College of Medicine		(1929)	Iowa
Tulane University of Louisiana School of Medicine		(1928) (1912), (1925), (1926)	Louisiana Michigan
Univ. of Minnesota Med. Sch.		(1902), (1926), (1927), (1929) (1912) (1925) (1926)	Minnesota Michigan

Univ. of Minnesota Med. Sch.	(1902) (1926) (1927) (1929)	Minnesota
St. Louis University School of Medicine	(1924)	Missouri
University of Nebraska College of Medicine	(1927), (1929)	Nebraska
University of Oregon Medical School	(1929, 2)	Oregon
Jefferson Medical College	(1923) Pennsylvania, (1925)	Minnesota

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement of
Harvard University Medical School	(1926)	N. B. M. Ex.
University of Oregon Medical School	(1928, 2)	N. B. M. Ex.
University of Pennsylvania School of Medicine	(1927)	N. B. M. Ex.

Book Notices

APHASIA IN CHILDREN. By Alex. W. G. Ewing, M.A., Ph.D. With an introduction by E. D. Adrian, M.D., F.R.C.P, F.R.S. Cloth. Price, $3.50. Pp. 152. New York: Oxford University Press, 1930.

Ewing states that in the speech and language development of the normal child the essential processes are first hearing and then learning to understand and to imitate the spoken word. In the absence of hearing, neither understanding of words, speech, reading, nor writing develop naturally. The author emphasizes the importance of testing the hearing of all children suspected of aphasia. He reviews in detail the various hearing tests, including the Rinne (tuning fork test of air and bone conduction), watch test, whispered speech, phonograph audiometer, tonoscope and sensitive flame, and the audiometer. The last mentioned instrument is a model 2 A Western Electric Company audiometer and is used in the course of the author's investigations. The audiometer as a means of testing hearing is found to give quantitative measurements of a range and accuracy unobtainable with any other known form of apparatus and it has made known the existence of hearing in children who had been considered totally deaf to sound. The author discovered that, among individuals whose hearing is apparently normal, differences in auditory acuity may occur all over the tonal range. Furthermore, the sense of hearing is not the same in any two individuals. He made the important discovery that a hearing defect occurred which he termed "high-frequency deafness." Five boys and one girl were found to suffer from this hearing defect. The symptoms of the high-frequency deaf children, such as variable reaction to noises, noncomprehension of speech and mutism, were due to their subnormal acuity to the usual speech frequencies. Ewing employed special methods of training and education in these patients and was able to produce considerable improvement in hearing and in the ability to acquire new and difficult words by ear alone. The second half of the volume is devoted to an extensive review of the literature of aphasia. The author finds that in proportion to the abundant literature devoted to adults the special treatment of the condition in childhood is relatively small and consists for the most part of a description of "word blindness" or "visual aphasia." As a result of investigations on 100 individuals, the author further determined the minimum hearing essential to normal speech and language development in terms of his audiometer readings. Ewing has carried out an important investigation on the study of deafness and aphasia in children and his contribution on high-frequency deafness is of the utmost importance. It should be studied in aphasic children as well as those who present symptoms of defective or retarded hearing.

LE DIAGNOSTIC DES ANGINES AIGUËS. Par A.-B. Marfan, professeur honoraire à la Faculté de médecine de Paris. Paper. Price, 10 francs. Pp. 92. Paris: Masson & Cie, 1929.

The purpose of this concise volume on acute sore throat is expressed by the author in his introduction. It is his intention to show, first, that it is possible by a purely clinical examination to establish enough of a diagnosis to determine whether the case demands antidiphtheria serum and, secondly, to make revision in the description and clinical classification of sore throats. As he states, the accurate and immediate clinical differentiation is of the greatest importance to the welfare of the patient. It has been the author's experience in diphtheria that when the clinical and bacteriologic diagnosis are based on exact observation there is little discord. There are exceptions in which either a clinical or a bacteriologic examination may be in error, but usually a clinical examination will afford sufficient basis for the diagnosis and, if the case is one of diphtheria, many valuable hours may be saved. For convenience in discussion, he divides the acute sore throats into those in which one does not see a white coating—the red sore throats—and the cases in which there is a more or less extensive membrane—the white sore throats. These two artificial groups are then considered in detail and the various clinical conditions are presented, with especial attention to the diagnostic features of each. After a short section on bacteriology, in which it is not his purpose to enter into a full discussion, the author states briefly the conclusions which he thinks are warranted by the preceding exposition. When a pseudomembranous sore throat is primary and does not follow scarlet fever, tonsillitis, syphilis or some other infection, it should be considered as diphtheritic and serum should be given at once without delay for bacteriologic examination. When such a pseudomembrane follows another recognized infection, one is justified in regarding diphtheria as improbable; but an immediate bacteriologic examination should be made, as diphtheria does coexist with the other infections. Moreover, if an epidemic of diphtheria is present, or if there is a laryngitis or a coryza with red nostrils and serous or serosanguineous discharge, serum should be given without waiting for bacteriologic results. In any doubtful case that cannot be determined bacteriologically, serum should be used; and it should be used in any case in which temporizing might be detrimental to the welfare of the patient, without awaiting bacteriologic observations. The volume has many practical clinical suggestions and is of value and interest.

A PRIMER FOR DIABETIC PATIENTS: A BRIEF OUTLINE OF THE TREATMENT OF DIABETES WITH DIET AND INSULIN, INCLUDING DIRECTIONS AND CHARTS FOR THE USE OF PHYSICIANS IN PLANNING DIET PRESCRIPTIONS. By Russell M. Wilder, M.D., Professor and Chairman of the Department of Medicine, University of Chicago Clinics. Fourth edition. Cloth. Price, $1.50. Pp. 138, with 4 illustrations. Philadelphia: W. B. Saunders Company, 1930.

Wilder's book fulfils the author's intention to provide a guide for the patient who is under the care of a physician. Believing that no patient with a disease as severe as diabetes should be encouraged to attempt self-treatment, he expects the patient to secure further guidance and additional interpretation and regulation from a physician. But as a supplementary measure this popular manual, other editions of which are now widely used, can be well recommended. Perhaps of most practical assistance to the patient will be the seventy-one recipes, which do not make use of any unusual or patented ingredients. Equally helpful will be the table of emergency diets, designed to meet the needs of the diabetic patient during a period of illness, and the simple menu outlines for patients who must travel.

DIÄTETISCHE BEHANDLUNG DER HAUTTUBERKULOSE UND ERNÄHRUNGSBIOLOGIE. Von Professor Dr. Albert Jesionek, und Assistenzarzt Dr. Lutz Bernhardt. Tuberkulose-Bibliothek, Beiheft zur Zeitschrift für Tuberkulose, Nr. 37. Herausgegeben von Prof. Dr. Lydia Rabinowitsch. Paper. Price, 5 marks. Pp. 48, with 24 illustrations. Leipzig: Johann Ambrosius Barth, 1930.

The beneficial effect of the Sauerbruch-Hermannsdorfer-Gerson diet on cutaneous tuberculosis is here presented in a concise and beautifully illustrated booklet. The subject matter is divided into two parts. The first part, on the Sauerbruch-Hermannsdorfer-Gerson diet and skin tuberculosis, presents discussions of the methods employed: diet, diet plus minerals, phosphorus and cod liver oil and diet plus physical therapy, especially ultraviolet radiation. The authors are fully convinced of the real value of the diet alone in clearing up tuberculous lesions of the skin. A chapter on statistics follows, giving support to these statements. Then come two interesting chapters on the evolution of local healing and the effect of the diet on general health and reports on the permanence of the results attained. The first section of the book closes with mention of 4 cases, out of the 341 under their control, that failed to respond to the treatment and a discussion of technical questions arising from the extended use of diets in tuberculous patients. The second section concerns itself with the rationale of feeding as observed in nature. A study of the sustenance of cells and unicellular organisms is given and the life of animals and primitive man with their instinctive methods of feeding is given as evidence in support of the rationality of the salt free diet. Civilization and changes in the types of food and methods

of preparation, especially concerning the salt content, are discussed. Raw foods, the rational feeding of tuberculous patients and a comparison of the Sauerbruch-Hermannsdorfer-Gerson diet and natural methods of feeding is made. The brief for the value of the special diet is carefully and conservatively made; on the other hand, mention is made of such dangers as trichinosis, tularemia and pork tapeworm, inherent in the consumption of raw foods. Wide recognition should be given to the methods of treatment discussed in this valuable booklet, especially in sanatoriums, where dietary control is comparatively easy; but the diet, or an approach to it, is not impossible even as a part of home treatment.

A TREATISE ON ORTHOPAEDIC SURGERY. By Royal Whitman, M.D., M.R.C.S., F.A.C.S., Consultant to the Hospital for the Ruptured and Crippled, New York. Ninth edition. Cloth. Price, $10 net. Pp. 1085, with 981 illustrations. Philadelphia: Lea & Febiger, 1930.

Whitman's has been one of the standard textbooks on orthopedic surgery for the student, general practitioner and orthopedic surgeon since the first edition in 1901. The text of the present revision contains twenty-four chapters of excellent orthopedic manuscript and illustrations that are well arranged and easily read. One is impressed with the fact that the book is a compilation of years of work and experience with the ultimate attainment of an excellent textbook. In undertaking a revision of his text, the author did not bring the statistics down to date except in a few instances. There seems to have been no attempt to modernize the photographic description of various orthopedic conditions. No description is given of several new important features in recent developments in the orthopedic field. There is no mention of the Galeazzi apparatus in the treatment of scoliosis. Orr's treatment of osteomyelitis is given only one page. There is nothing on Baer's living scavenger treatment for osteomyelitis. Neither Boehler's work on fracture nor Steindler's compensation treatment of scoliosis is mentioned. The chapter on the foot is especially recommended. He has revised the chapters only slightly as follows: For rigid weak foot, the operative treatment includes Miller's operation, with three illustrations. The operation includes a flap of ligament and bone from the inner side of the foot including the three joints, removing sections from each articulation, correcting the deformity and replacing the flap. Whitman's abduction treatment of fracture of the femur is given and no changes are found except for the addition of Krenz's observations on twenty-three bodies, in which he found that the most secure apposition of the fragments is obtained by a position of 45 degrees abduction with inward rotation and extension. It is regrettable that Whitman does not give his own statistics of his results on this method, which he popularized. Almost no changes are made in the portion on Whitman's reconstruction operation for ununited fracture of the neck of the femur.

DER OPERIERTE MAGEN. Von Prof. Dr. Hermann Meyer-Burgdorff und Dr. Walter Schmidt. Paper. Price, 9.60 marks. Pp. 114, with 146 illustrations. Leipzig: Georg Thieme, 1930.

This will be found of interest to the internist, surgeon and roentgenologist alike. The diversity of symptoms arising following gastric operations require careful investigation. The roentgenologic study of the gastro-intestinal tract after operations on the stomach is difficult because of the anatomic and functional changes it undergoes. This difficulty is exaggerated by the multiplicity and variety of the types of gastric operation as well as the anastomoses used. A thorough understanding of the operative technic is essential to interpret correctly the appearance of the stomach postoperatively and to evaluate its function. The work is based on a clinical and roentgenologic study of 400 postoperative gastric cases. The authors, after a preliminary discussion of the normal physiology and morphology of the stomach as well as the effect of disease, consider the various possible operations on the stomach. The plan consists of a presentation of the important technical details of each operation, the clinical symptoms that may follow, and their roentgenologic interpretation as well as the difficulties that may arise during the examination and how to avoid them. The subject is discussed clearly and adequately and is the more valuable since it is based on a personal follow-up study of such a large number of cases. Diagrams and roentgenograms graphically illustrate the many points presented. An excellent bibliography is appended. The monograph is not only interesting but of value to those who deal with medical or surgical gastro-enterology, diagnostically or therapeutically.

GENETIC STUDIES OF GENIUS. Edited by Lewis M. Terman. Volume III: The Promise of Youth: Follow-Up Studies of a Thousand Gifted Children. By Barbara Stoddard Burks, Dortha Williams Jensen and Lewis M. Terman. Assisted by Alice M. Leahy, Helen Marshall and Melita H. Oden. Cloth. Price, $6. Pp. 508. Stanford University: Stanford University Press, 1930.

In this volume a thousand gifted children studied over a period of several years are analyzed as to their later development. The children concerned were first located and studied in 1921 and 1922. Since that time their development has been followed regularly with tests of achievement and intellect, and an attempt to determine as nearly as possible the reasons for genius. The first two volumes of this series covered the mental and physical traits of the children and the early mental traits of 300 of them. The present volume provides retests of intellect, a record of educational progress, scholastic and other interests, vocational plans and vocational achievements, social and personality traits, school acceleration by several and personality problems. In their summary, the authors provide a composite picture of a gifted child. They point out that, in the case of such of these gifted children as have grown up and married, the spouses are as a whole less well educated than the gifted subjects that have married them. They feel that something should be done about this, that it is indeed a duty of the gifted to select gifted mates to improve the character of the stock. One of the chief difficulties of eugenics is the fact that it has never yet been successfully capable of overcoming the effects of the biologic urge and the emotions.

MEDIZINISCHE PRAXIS: SAMMLUNG FÜR ÄRZTLICHE FORTBILDUNG. Herausgegeben von Prof. Dr. L. R. Grote, Chefarzt der C. Von Noorden-Klinik Frankfurt a. M., Prof. Dr. A. Fromme, Direktor der chirurgischen Abteilung des Stadtkrankenhauses Dresden-Friedrichstadt, und Prof. Dr. K. Warnekros, Direktor der staatlichen Frauenklinik zu Dresden. Band IX: Blutung und Fluor. Von Prof. Dr. Hans Runge, Oberarzt der Universitäts-Frauenklinik Kiel. Mit einem Vorwort von Prof. Dr. Robert Schröder, Direktor der Universitäts-Frauenklinik Kiel. Paper. Price, 8 marks. Pp. 108, with 18 illustrations. Dresden: Theodor Steinkopff, 1930.

This monograph is one of a series of eleven prepared for general practitioners. The present monograph contains only material of practical interest and application concerning uterine and cervical bleeding and leukorrhea. The arrangement of the material is ideal for the practitioner; the subject matter is presented in simple, concise language and the few illustrations that are reproduced are most instructive. In order not to confuse the practitioner, the author nearly always describes his own methods of treatment for each condition instead of enumerating the preferences of other authorities. The discussion on hemorrhage takes up eighty-five pages and includes bleeding not only from the uterus and cervix but also from the vagina and vulva. In the first part is a discussion of the physiology of uterine bleeding, including a consideration of the hormones. Then the author takes up the irregularities of menstrual bleeding and finally atypical hemorrhages not associated with the menses. At the end of this section is a chapter on the practical utility of hormone preparations in the treatment of uterine hemorrhage. The discussion on leukorrhea takes up twenty pages and is divided into discharges that arise in the vestibule, the vagina, the cervix, the body of the uterus and the tubes, and leukorrhea during pregnancy. The booklet is well worth reading not only by general practitioners but also by specialists in gynecology.

SCIENCE AND THE SCIENTIFIC MIND. By Leo E. Saidla, Assistant Professor of English, Polytechnic Institute of Brooklyn, and Warren E. Gibbs, Instructor in English, Columbia University. Cloth. Price, $3. Pp. 506. New York: McGraw-Hill Book Company, Inc., 1930.

In this volume are collected some nontechnical scientific articles by twenty-four noted figures in the field of science. They represent the finest type of the essay. They are written by men with a thorough knowledge of the subjects they discuss. The publishers have wisely suggested the possibility that this material might well be used as a model for the scientific writer.

LES URTICAIRES CRISES HÉMOCLASIQUES. Par Édouard Joltrain, directeur de l'Institut de recherches de la clinique médicale du Professeur Widal à l'Hôpital Cochin. Avec biographie du Professeur Fernand Widal. Paper. Price, 40 francs. Pp. 417, with illustrations. Paris: G. Doin & Cie, 1930.

In this book, Joltrain, an undoubted disciple of Widal, has taken the urticarial syndrome and placed it on a firm foundation. He deals first with the historical background, then with clinical manifestations, and then attacks the etiologic problems. In an enlightening manner he discusses alimentary agents, fish, eggs, wheat bread and others; medicinal agents such as arsenic, bismuth, antipyrine and insulin; protein and such albuminoid agents as vaccine and hydatid fluid, and physical agencies, as cold, heat and light. Especially interesting is the chapter on the production of urticaria by fatigue. The association of urticaria with asthma, paroxysmal tachycardia, gallstones, eczema, hyperthyroidism, epilepsy, psychoses and other morbid conditions is thoroughly considered in a stimulating chapter. The closing chapters on the humoral changes during an attack of urticaria, the rôle of the constitutional factors, diagnosis and therapy are excellent. The book closes with a bibliography, which, contrary to the too common continental custom, is international in scope. This book recommends itself to the general medical profession but most of all to the dermatologist.

PIERSOL'S HUMAN ANATOMY INCLUDING STRUCTURE AND DEVELOPMENT AND PRACTICAL CONSIDERATIONS. By G. Carl Huber, M.D., Sc.D., Professor of Anatomy, University of Michigan. Ninth edition. Cloth. Price, $10. Pp. 2104, with 1734 illustrations. Philadelphia: J. B. Lippincott Company, 1930.

The first edition of this book, published in 1906, was edited by the professor of anatomy at the University of Pennsylvania, Dr. George A. Piersol, who was assisted by the emeritus professor of surgery and by professors of anatomy of Harvard University, the University of Toronto and Western Reserve University. The present edition has been revised under the supervision of Dr. G. Carl Huber and several other teachers of anatomy at the University of Michigan. They have introduced a uniform anatomic nomenclature, and sections in the text dealing with the development of the lymphatics and the primary veins, the histogenesis of the blood elements, the peripheral nervous system, and sections dealing with the fiber paths of the central nervous system. A new anatomy always interests a medical student. The science is fundamental to the study of medicine, and the student acquires his knowledge largely by visualization. He must see anatomy with his eyes, his microscope and his mind. A great aid to the student in forming these mental pictures is a textbook that is filled with pictures. This book is well illustrated and therefore most helpful to the student. There are many new illustrations, printed in a way that makes learning easier. Certain areas of an object are tinted, for example, in order that special features may stand out. Many sagittal sections of parts of the body are included to show the relation of the various structures. The illustrations, through their excellence, form a special feature of the book.

HANDBUCH DER THEORETISCHEN UND KLINISCHEN (ALLGEMEINEN UND SPEZIELLEN) RÖNTGENKUNDE. Herausgegeben von Guido Holzknecht. Band II: Otologische Röntgendiagnostik. Von Dr. Ernst G. Mayer, Assistent am Zentral-Röntgeninstitut Professor Dr. G. Holzknecht, Wien. Klinischer Beitrag — Die Wertund und Verwendung der Röntgenbefunde in der Otologie. Von Dr. Karl Eisinger, Assistent und röntgenologischer Referent der Univ.-Klinik für Ohren-, Nasen und Kehlkopfkrankheiten Professor Dr. H. Neumann, Wien. Paper. Price, 75 marks. Pp. 357, with 617 illustrations. Vienna: Julius Springer, 1930.

The reading of this volume makes one wish, without prejudice to native authors, that there were more works of this kind available in our own language. It appears to be a complete and detailed study of the temporal bone in states of health and disease. Roentgen technic is described in detail. An absorbing series of pen and ink illustrations indicate line by line, in three standard German positions, anatomic points of interest. A careful perusal of this section can hardly fail to be of immense benefit. There are chapters on disease states, and fac-similes of actual x-ray films accompanied by pen and ink drawings to illustrate important features. Syphilis and tuberculosis and their x-ray manifestations as well as new growths, benign and malignant, tumors, fractures, postoperative defects and congenital malformations are interestingly dealt with. There is a complete and absorbing discussion of the value and uses of roentgenology in otology by the second author.

VIII. THE MOVEMENTS OF THE EYES IN READING. By M. D. Vernon. Reports of the Committee upon the Physiology of Vision. Medical Research Council, Special Report Series, No. 148. Paper. Price, 9d. Pp. 45. London: His Majesty's Stationery Office, 1930.

This monograph describes experiments made in the psychologic laboratory at the University of Cambridge on the movements of the eyes in reading. The author investigated the effects of different factors, such as meaning, interest, and trains of thought, on the effector mechanisms of reading, these effects being judged by observation of the ocular movements and the rate of reading. The basis of these experiments is the method originally invented by R. Dodge and depends on the fact that the movements of the bright spot of light reflected from the cornea are the same in direction, though only half as great in magnitude, as those of the eyeball itself. These movements were recorded on a continuously moving film by the reflection of a small, strong beam of light, the source of which was a 100 candle power Ediswan Pointolite bulb, which was directed toward the cornea while the experimental subjects were reading various types of reading matter. It was proved that the most rapid and regular reading was shown by the mature reader with fairly easy material, when he was attending to the content, although this may show some modification. It is true that the average rate of reading of all types of material may be determined by training and use, since with one exception it was approximately the same for all subjects of these experiments who had had a similar general education, while it was slower for the subject who had had less education. It was shown that the reading time varies enormously about the mean according to the individual's reactions to the material read. The average duration and frequency of the fixation pauses together constituted the average reading time. The relation of duration to frequency was shown to be in all probability a function of the motor ability and accuracy of the subject's extra-ocular muscles. No connection with actual ocular defect was established, but it is possible that there may be some variation of motor skill apart from any defect that can be diagnosed. The author concludes that the rate of reading varies enormously according to a variety of mental processes, unconnected with training, which accompany reading, and of which conative impulses may possibly be the most fundamental. The article is more definitely related to the psychology of vision than to its ophthalmologic aspects but may well be read with interest by every ophthalmologist.

DER CHIRURGISCHE OPERATIONSKURSUS: EIN HANDBUCH FÜR ÄRZTE UND STUDIERENDE. Von Prof. Dr. Victor Schmieden, o. ö. Professor der Chirurgie, Direktor der chirurgischen Universitätsklinik zu Frankfurt a. M., und Prof. Dr. A. W. Fischer, Oberarzt der chirurgischen Universitätsklinik zu Frankfurt a. M. Twelfth edition. Cloth. Price, 48 marks. Pp. 543, with 588 illustrations. Leipzig: Johann Ambrosius Barth, 1930.

This deals principally with the fundamentals of surgery. It is an extremely popular book in German schools, and information from German surgeons discloses that it is a necessary textbook for the German medical student, in that his examinations in surgery are based on his knowledge of its contents. Surgical anatomy and the fundamental principles of surgical technic are taught with reference to this book as the textbook. This in itself proves its value. Aside from being a textbook, it is also of great value as a work of reference. The surgery of blood vessels, nerves and tendons, the technic of amputations and radical resections of important structures, as in the case of cancer, are beautifully illustrated with colored drawings. In fact, the illustrations are one of the principal assets of the book. The type and use of instruments in the various operations are clearly described and illustrated the same as in an instrument catalogue. There are numerous illustrations showing the exact technic of all the operations that are described. The author has developed these features in a clear, simple, direct and concise style.

DICTIONARY OF BIOLOGICAL EQUIVALENTS: GERMAN-ENGLISH. By Ernst Artschwager, pathologist, Bureau of Plant Industry, U. S. Department of Agriculture. Cloth. Price, $4.50. Pp. 239, with 78 illustrations. Baltimore: Williams & Wilkins Company, 1930.

In this volume the German terms frequently used in scientific literature are given their English equivalents. The source of the words is the publication "Biological Abstracts." The volume is useful.

Medicolegal

Right of Medical Society to Expel Members

(Irwin v. Lorio et al., and three other cases, (La.), 126 So. 669)

The Stanacola Employees' Medical and Hospital Association, an association of the employees of a certain corporation to procure medical and hospital services for its members, contracted with Drs. Irwin, Young and Morris to furnish such services. The physicians named were members of the East Baton Rouge Parish Medical Society, which is chartered by the Louisiana State Medical Society and is bound, as is the state society, by the code of ethics of the American Medical Association. One provision in this code reads, in part, as follows:

> It is unprofessional for a physician to dispose of his services under conditions . . . which interfere with reasonable competition among the physicians of a community.

An expulsion from the local society acts as an expulsion from the state society. Because of this, the by-laws of the state society give any physician expelled from or refused membership in a local society the right to appeal to the council and house of delegates of the state organization.

The local society adopted a resolution that any member failing to comply with the section of the code of ethics set forth should be deemed no longer to desire membership in the local society. At a later meeting, at which a quorum was present, the local society declared by resolution that the contracts between the physicians named and the association were unethical. Thereafter an opportunity was given the physicians to surrender their contracts, which they refused to do. The society then instituted proceedings to expel them. The physicians named and the hospital association, individually, brought court actions against thirty physician members of the society, a majority of the membership, to restrain them from expelling or voting to expel the complaining physicians. The contracts, the complainants alleged, were not in violation of the code of medical ethics; the expulsion of the physicians would deprive them of the right to use the only hospitals in the community, since the hospital management would permit only physician members of the local society to use their hospital facilities; the use of the hospitals was necessary in the practice of the complainants and in discharging their contracts, which constituted a valuable property right; and the physician defendants had conspired to expel them from the society. A temporary injunction was granted, and the defendants appealed to the Supreme Court of Louisiana.

A local medical society, said the Supreme Court of Louisiana, has the power to suspend or expel its members for legal cause, after determining from a due hearing had whether the cause alleged for suspension or expulsion has been established. After the final hearing, the member proceeded against has the right, given him by the local and the state society, to appeal to the council and the house of delegates of the latter, where the fairness of the trial may be looked into and the order of suspension may be annulled or affirmed, as justice may demand. Since the appeal allowed by the by-laws of the two societies is an effective appeal—that is, one which would prevent the local society from carrying out its order of expulsion until the appeal is passed on—the person aggrieved must exhaust his recourse within the society before he may resort to the courts. In 5 C. J. 1364, it is said:

> The courts will not interfere with the internal affairs of an unincorporated association so as to settle disputes between the members, or questions of policy, discipline, or internal government, so long as the government of the society is fairly and honestly administered in conformity with its laws and the law of the land, and no property or civil rights are invaded. Conversely, the proceedings of the association are subject to judicial review where there is fraud, oppression, or bad faith, or property or civil rights are involved, or the proceedings in question are violative of the laws of the society or the law of the land, or are illegal. Even in these cases, however, the courts will not take jurisdiction unless the complaining member has exhausted such remedies as may be provided by the laws of the association itself.

The rule that a complaining member of a voluntary association must exhaust his remedies within the association before he may resort to the courts for relief has been recognized by this court in *Rabb* v. *Trevelyan*, 122 La. 174, 47 So. 455, and *Braden* v. *Lewis*, 148 La. 920, 88 So. 117. In the instant case the complaining physicians have not exhausted their remedy within the society.

While, said the Supreme Court, it is true that the injunction here prayed for is not directed against the association itself, or all of its members, the injunction is directed against a majority of the members. To restrain them from voting on charges preferred for the expulsion of a member is the same in effect as though the association or its entire membership had been restrained, for the right of the association to function is thereby greatly interfered with, if not entirely destroyed. The principles quoted are therefore applicable to the present situation.

The injunctions issued by the lower court were accordingly dissolved and the local medical society was left free to proceed with the hearings.

"Patent Medicine" Defined.—The article compounded and vended by the appellant was prepared from a secret formula as a medicine for the treatment of certain diseases, put up in packages or bottles, and labeled with a name for immediate use. This was sufficient to constitute it a patent medicine in the sense in which that term is generally used and in which it was used in the city ordinance under which the question arose. While originally the word "patent" was attached to an article because it was the subject of a patent, it has lost that significance by usage and has become merely a part of the name of the article. Where any article intended to be used for medicinal purposes is prepared from a secret formula and is placed in containers, either packages or bottles, for sale, to be used without further preparation, and is labeled so that it may be for immediate use, it is a matter of common knowledge that such remedies are "patent" or "proprietary" medicines.—*Riggs v. City of Hot Springs (Ark.), 26 S. W. (2d) 70.*

Insurance: Gonorrheal Rheumatism a "Serious Disease."—An insurance policy provided, among other things, that it was void if the insured, within two years from the date of its issue, had attended a hospital or had treatment by a physician for "any serious disease, complaint or operation." It was conceded that within the period named, the insured was in a hospital for eighty-five days, undergoing treatment for gonorrheal rheumatism. The Supreme Court of New York, Appellate Division, First Department, on appeal, held that the insured had "a serious disease" within the meaning of the policy.—*Butkevicus v. John Hancock Mut. Life Ins. Co., 240 N. Y. S. 358.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Goiter, Kansas City, Mo., April 7-9. Dr. J. R. Yung, 670 Cherry Street, Terre Haute, Ind., Secretary.

American Association of Anatomists, Chicago, April 2-4. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Cleveland, April 2-3. Dr. H. T. Karsner, 2085 Adelbert Road, Cleveland, Sec'y.

American College of Physicians, Baltimore, March 23-27. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.

American Orthopsychiatric Association, New York, February 20-21. Dr. George S. Stevenson, 370 Seventh Ave., New York, Secretary.

American Physiological Society, Montreal, April 8-11. Dr. Arno B. Luckhardt, 5216 Greenwood Avenue, Chicago, Secretary.

American Society for Experimental Pathology, Montreal, April 8-11. Dr. C. Phillip Miller, Jr., University of Chicago Department of Medicine, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Montreal, April 8-11. Dr. E. D. Brown, University of Minnesota Medical School, Minneapolis, Secretary.

American Society of Biological Chemistry, Montreal, April 8-11. Dr. H. B. Lewis, University of Michigan Medical School, Ann Arbor, Mich., Secretary.

Federation of American Societies for Experimental Biology, Montreal, April 8-11. Dr. H. B. Lewis, University of Michigan Medical School, Ann Arbor, Mich., Secretary.

Pacific Coast Surgical Association, Victoria, British Columbia, February 27-28. Dr. E. L. Gilcreest, 384 Post Street, San Francisco, Secretary.

Southeastern Surgical Congress, Atlanta, Ga., March 9-10. Dr. B. T. Beasley, 45 Edgewood Ave., Atlanta, Ga., Secretary.

Tri-States Medical Association of Mississippi, Arkansas and Tennessee, Memphis, February 17-20. Dr. A. F. Cooper, Bank of Commerce Bldg., Memphis, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics & Gynecology, St. Louis

20: 749-910 (Dec.) 1930

*Survey of Causative Factors in Sterility. S. R. Meaker, Boston.—p. 749.
*Effect of Acriflavine Given Intravenously on Experimental Uterine Infection in the Dog. J. L. Meyer, Chicago.—p. 760.
Significant Problems for Obstetrician in Field of Mammary Cancer. B. J. Lee, New York.—p. 775.
*Method of Delivery and End-Result of Two Hundred and Twelve Cases of Occiput Posterior Position. N. W. Vaux, Philadelphia.—p. 782.
Effect of Thymophysin on Human Pregnant Uterus in Situ. M. P. Rucker, Richmond, Va.—p. 791.
Analysis of Fifty Cases of Toxemia of Pregnancy. P. D'Acierno, Union City, N. J.—p. 797.
Determination of Fetal Maturity in Utero. H. Thoms, New Haven, Conn.—p. 807.
Paralysis of Bladder, with Distention and Hemorrhage Immediately Following Catheterization: Cases. D. Bissell, New York.—p. 811.
Maternal Mortality in the Jewish Hospital of Brooklyn. J. Ronsheim and I. Daichman, Brooklyn.—p. 816.
Hydrogen Ion Concentration of Blood in Eclampsia. H. J. Stander and N. J. Eastman, Baltimore.—p. 822.
*Carbon Dioxide Content of Blood in the New-Born. H. F. Kane and J. Kreiselman, Washington, D. C.—p. 826.
Two Cases of Ureteral Calculus in Female. D. Bissell, New York.—p. 828.
Case of Fetal Generalized Edema. J. J. Gill and I. Auld, Chicago.—p. 834.

Survey of Causative Factors in Sterility.—Meaker reports some of the results of an organized group study conducted during the past three years. He discusses absolute and relative sterility. In absolute sterility the initiation of the reproductive process is, at any rate for the time being, flatly impossible. This situation results from conditions of two general sorts: those suppressing entirely the production of ova or spermatozoa, and those entirely preventing the access of spermatozoon to ovum. Such disability may be temporary only and remediable by nature or art, or it may be permanent. Absolute sterility is found in about 30 per cent of sterile matings. In relative sterility, on the other hand, the initiation of the reproductive process is not definitely impossible but is to some extent impeded and made difficult. Ova and spermatozoa are produced, but they may be deficient in number and subnormal in quality. The access of the male gamete to the female is not entirely prevented, but obstacles of one sort or another may be placed in the way. Thus the capacity for reproduction, still actually present, is diminished to a degree that varies within wide limits in different cases and fluctuates within narrower limits in the same case at different times. Sterility is commonly due to the combined influence of multiple causative factors. Any single one of these, excepting the comparatively few absolute factors, may not be sufficient to cause sterility; all of them together depress fertility below the threshold of conception. About one third of all demonstrable causative factors are extragenital conditions of constitutional depression, which lower the inherent fertility of the gametes. Such conditions are operative, in one or both partners, in nearly 90 per cent of sterile matings. In the male they are, in the aggregate, more important than abnormal local conditions. About one third of all demonstrable causative factors are on the male side and two thirds on the female side. In more than 90 per cent of clinical cases, however, there is some division of responsibility between the two partners. Complete investigation points the way to adequate treatment, which in the author's cases has thus far yielded a percentage of successful results more than twice as great as the average of successes obtained by former methods.

Acriflavine Intravenously in Experimental Uterine Infection.—The experiments reported by Meyer show that the intravenous injection of an appropriate dose of acriflavine hydrochloride has a definite beneficial effect on the course of the experimentally infected uterus of the dog. The earlier the dye is injected, the more definite the effect. In some instances, sterile cultures of the inoculated or infected uterine horn are obtained after acriflavine therapy. The beneficial effect of the acriflavine on the course of the uterine infection is also shown by the return to normal in body temperature by lysis. On the basis of these results it is believed that intravenous acriflavine in appropriate dosage is worthy of being tried in early uterine infections.

Method of Delivery in Occiput Posterior Position.—Vaux is convinced that prenatal care of the mother with regard to the toxemias and antenatal health of the individual has so overshadowed some of the equally important conditions existing in these women that the subject of pelvic abnormalities and positions prior to delivery has been greatly neglected. He insists that the diagnosis of position should be made before labor onset if possible and definitely established as early as possible after the onset of labor. The primiparous patient with a moderately contracted pelvis should be looked on before the onset of labor as resulting in the possibility of a posterior position existing, with a difficult labor ahead. The aim of conserving the amniotic sac intact, and guarding more carefully the patient's strength during the long first stage of labor in posterior position cases, is of paramount importance in whatever method of delivery is selected. Intervention is not justified in posterior positions until the cervix is fully dilated and effaced and until the fetal head is at or near midpelvis.

Carbon Dioxide Content of Blood in New-Born.—The carbon dioxide content of the blood of forty-seven new-born infants was determined by Kane and Kreiselman. The forty-seven specimens examined were divided into three groups: blood (1) from babies deep in asphyxia, (2) from babies who gasped once or twice during the collection of the blood, and (3) from babies who were born crying. It would seem that the carbon dioxide content of the blood in the new-born is consistently high, that the proportion of carbon dioxide increases with the degree of asphyxia, and, therefore, that the addition of carbon dioxide to oxygen as a resuscitating agent is contraindicated.

American Journal of Physical Therapy, Chicago

7: 353-396 (Dec.) 1930

Biological Measurements of Ultraviolet Sources. G. H. Maughan and J. A. Dye, Ithaca, N. Y.—p. 559.
Radium Treatment of Epithelioma of Skin. R. Ward, London.—p. 365.
Action of Ultraviolet Light on Ear. H. P. Bellows, Boston.—p. 369.

American Journal of Public Health, New York

20: 1275-1390 (Dec.) 1930

Time, Cooperation and Research Measure Success in Health Work. A. J. Chesley, St. Paul.—p. 1275.
Precise Evaluation of Light Therapy in Experimental Rickets. J. W. M. Bunker and R. S. Harris, Cambridge, Mass.—p. 1287.
Evolving a Health Department. E. G. Williams, Richmond, Va.—p. 1293.
Incidence of Partial Paralysis. E. L. Bishop and H. C. Stewart, Nashville, Tenn.—p. 1307.
Agglutination Tests for Diagnosis of Undulant Fever. S. Bayne-Jones, Rochester, N. Y.—p. 1313.
Industrial Nurse in Gear with Machinery for Human Adjustment. V. H. Hodgson, New York.—p. 1323.

American Review of Tuberculosis, Baltimore

22: 571-802 (Dec.) 1930

Pulmonary Asbestosis: Case. W. B. Soper, New Haven, Conn.—p. 571.
Tuberculosis of Liver: Case. E. Morris, Auberry, Calif.—p. 585.
Acute Miliary Tuberculosis of Liver: Case. B. M. Randolph, Washington, D. C.—p. 593.
*Relationship of Tuberculous Cervical Adenitis to Pulmonary Tuberculosis. G. P. Grabfield and R. H. Miller, Boston.—p. 598.
Epidemiology of Tuberculosis of Negroes. E. L. Opie, Philadelphia.—p. 603.
Anatomic Characteristics of Tuberculosis in Jamaica. E. L. Opie, Philadelphia.—p. 613.
*Tuberculous Infection in School Children. H. D. Chadwick, Westfield, Mass., and D. Zacks, Boston.—p. 626.
Attempt to Influence Growth of Tubercle Bacillus in Animal Body by Modifying Concentration of Growth-Promoting Substance (Glycerol) in Tissues. E. R. Long and A. J. Vorwald, Chicago.—p. 636.
Carbohydrates in Biologic Processes: Fractions of Tubercle Bacillus. T. B. Johnson and A. G. Renfrew, New Haven, Conn.—p. 655.

Carbohydrates Associated with Ether-Soluble Lipoids of Tubercle Bacilli. R. J. Anderson and E. G. Roberts, New Haven, Conn.—p. 664.
Biochemical Studies of Bacterial Derivatives: XII. Preparation of Human Tubercle Bacillus Polysaccharide MB-200 and Biologic Properties. P. Masucci, K. L. McAlpine and J. T. Glenn, Glenolden, Pa.—p. 669.
Biochemical Studies of Bacterial Derivatives: XIII. Occurrence of Mannose and d-Arabinose in Polysaccharide Isolated from Filtrate of Human Tubercle Bacillus Cultures. P. Masucci and K. L. McAlpine, Glenolden, Pa.—p. 678.
Biochemical Studies of Bacterial Derivatives: XIV. Preparation and Chemical Composition of Timothy-Bacillus Polysaccharide MB-200. P. Masucci and K. L. McAlpine, Glenolden, Pa.—p. 682.
Anatomic and Physiologic Aspects of Diaphragm. W. S. Lemon, Rochester, Minn.—p. 685.
Hernia of Mediastinum: Two Cases. C. C. Habliston, Baltimore.—p. 702.
Course of Tuberculosis in Lungs. E. H. Rubin, New York.—p. 710.
Anomalies in Artificial Pneumothorax Treatment. J. Gwerder-Pedoja, Davos, Switzerland.—p. 717.
*Oleothorax: Value of Intrapleural Injections of Olive Oil in Certain Phases of Pulmonary Tuberculosis. C. Sillig and M. C. Lang, Leysin, Switzerland.—p. 725.
Extrapleural Thoracoplasty in Presence of Artificial Pneumothorax. J. R. Head, Chicago.—p. 734.
*Thoracoplasty in Chronic Pulmonary Tuberculosis. E. H. Bruns and J. Casper, Washington, D. C.—p. 739.
*Radical Phrenicotomy. T. B. Aycock and C. C. Habliston, Baltimore.—p. 757.
*Phrenico-Exeresis in Pulmonary Tuberculosis. A. T. Cooper, Denver.—p. 769.
Collapse Therapy in Pulmonary Tuberculosis. W. C. Pollock, New York.—p. 780.

Relationship of Tuberculous Cervical Adenitis to Pulmonary Tuberculosis.—Grabfield and Miller are of the opinion that the correlation between thickening of the apical pleura and tuberculosis of the tonsils and cervical lymphatics is too close to be a matter of chance, and consequently one must take into account the possibility of this path of infection in pulmonary tuberculosis.

Tuberculous Infection in School Children.—This study by Chadwick and Zacks is based on 42,071 children examined and given the Pirquet tuberculin test during a period of three years. The ratio of reactors in the 42,000 children studied in this series shows a gradual trend upward from 21 per cent infections at age 5, and 28 per cent at age 10, to 35 per cent at age 15. The average percentage for the whole group is 28. Different sections in the same city may show a wide variation in the percentage of reactors. It was found in one city of 60,000 that the number of children reacting to the tuberculin test in different school districts varied from 11 to 60 per cent. The number of reactors increases with the opportunities that the child has for contact with bacillus carriers. Persons with chronic forms of pulmonary tuberculosis, such as are found in granite quarry workers, expose and infect more children than persons with the more acute forms, who live a much shorter time after the disease becomes infectious. Crowded living conditions afford more opportunities for contact and congested areas show a higher percentage of infection. Twice as many reactors are found among children with a history of direct contact with a case of pulmonary tuberculosis. Another factor to be taken into account is bovine infection. In a few rural towns with a scattered population and less than the average number of pulmonary tuberculosis deaths, 38 per cent of reactors were found. The majority of the small towns, however, show a little less than the average percentage for the state as a whole. The boys of the Irish Canadian and Teutonic groups in this series show a much higher incidence of infection than the girls. The death rate in Massachusetts for all forms of tuberculosis declined from 144 per hundred thousand in 1917 to 73 in 1927. Three important factors have operated to bring about a reduction in the number of infected children: 1. The steady decline in the death rate results in fewer persons with tuberculosis at large in the community to spread infection. 2. The state has a little more than one bed for each tuberculosis death in which to segregate cases of tuberculosis and so further reduce the foci of infection in the homes of these patients. 3. Pasteurized milk is now available for about 60 per cent of the population of the state and by so much is the possibility of bovine infection curtailed.

Oleothorax: Olive Oil in Pulmonary Tuberculosis.—Sillig and Lang assert that oleothorax, if judiciously applied, is a useful adjunct in the treatment of certain complications of pulmonary tuberculosis and, if carefully done, is not dangerous to the patient. In one case of spontaneous pneumothorax reported, the treatment appears to have prolonged the life of the patient.

Thoracoplasty in Chronic Pulmonary Tuberculosis.—Bruns and Casper have performed 210 thoracoplastic operations on 120 different patients and for statistical purposes have divided the patients into groups—those operated on from 1922 to 1928, inclusive, which demonstrate more the end-results, and those in 1929 and 1930, showing more the immediate effects of thoracoplasty. Among the 1922 to 1928 group, eight (8.6 per cent) operative deaths occurred, as compared with no operative deaths in 1929 and two so far in 1930. This is probably due to greater care in selecting cases, improved operative technic and better adjustment of the extent of the operation to the patient's condition. Twenty-six are apparently cured, twenty-three are arrested, nineteen are improved, seven are unimproved, and forty-five died.

Radical Phrenicotomy.—Aycock and Habliston dissected 130 phrenic nerves in the anatomic laboratory. Approximately 65 per cent of phrenic nerves in this series either showed anomalies or received accessory fibers below the usual site of operation. To insure the maximum beneficial results that should attend hemidiaphragmatic paralysis, phenico-exeresis should be performed rather than simple phrenicotomy. It is of the utmost importance to remove at least 11 cm. of the distal portion of the nerve in order to insure the desired result.

Phrenico-Exeresis in Pulmonary Tuberculosis.—Cooper regards phenico-exeresis as a valuable procedure in selected cases of mainly unilateral pulmonary tuberculosis, and it may be of possible benefit in bronchiectasis; also, that even some involvement of the contralateral lung with small cavitation is not in itself a definite contraindication. This operation, if there is a successful result, definitely tends to put the side operated on at rest. The operation in itself is a rather minor one and can be performed as a rule under local anesthesia. It has been found to be useful in particular cases in which there were pleuritic adhesions which prevented the administration of pneumothorax, and, if successful, it not only lessens the motion of the diaphragm, and thus the respiratory excursion on the operated side, but causes a definite partial collapse of the lung. The operation may be even of benefit to lesions of the upper lobe, as it appears that the operation in itself may not tend primarily to cause a collapse of the less involved part of the lung but may cause rather a greater collapse of the diseased portion; the less diseased lung, if disease is in the base, may not tend to collapse following such operation, if the more diseased portion of the lung is in the apex. If the less diseased portion is in the base of the lung, this part tends to move upward *en masse* in many cases, tending to compress an upper diseased portion.

Archives of Dermatology and Syphilology, Chicago

22: 957-1166 (Dec.) 1930

Purpose and Progress of American Dermatological Association. U. J. Wile, Ann Arbor, Mich.—p. 957.
Effect of Skin of Emotional and Nervous States: III. Theoretical and Practical Consideration of a Gastro-Intestinal Mechanism. J. H. Stokes and D. M. Pillsbury, Philadelphia.—p. 962.
*Conditions Affecting Clinical Excretion of Bismuth. P. J. Hanzlik and H. G. Mehrtens with Assistance of D. C. Marshall, F. Watson and J. Spaulding, San Francisco.—p. 994.
Senile Sebaceous Adenoma: Five Cases. R. Nomland, Chicago.—p. 1004.
*Treatment of Staphylococcic Infections of Skin by Bacteriophage. E. D. Crutchfield and B. F. Stout, San Antonio, Texas.—p. 1010.
Idiopathic Macular Atrophy of Skin. F. C. Combes, New York.—p. 1022.
Penetration of Organic Compounds of Arsenic into Cerebrospinal System. G. W. Raiziss and M. Severac, Philadelphia.—p. 1031.
Senile Keratoses and Seborrheic Keratoses. J. J. Eller and V. J. Ryan, New York.—p. 1043.

Conditions Affecting Clinical Excretion of Bismuth.—The effects of water drinking and of thermal, mechanical and chemical measures on the clinical urinary excretion of bismuth were investigated by Hanzlik and Mehrtens in subjects possessing gluteal depots of bismuth metal. The excretion of bismuth and diuresis varied directly with the changes in water intake. Of the four thermal measures tried, all of which increased the body temperature, steam baths and injections of typhoid vaccine increased the excretion of bismuth, though variably, in the majority of subjects used. Tub baths gave

equivocal results, and malarial fever was ineffective. A mechanical device that increased the muscular activity in the gluteal regions caused moderate increases in bismuth excretion in two of three subjects. The chemical measures tried were the chloride, iodide, thiocyanate, thiosulphate and bicarbonate of sodium and ammonium chloride, all given orally, except thiosulphate, which was given intravenously. Increases in the excretion of bismuth in the majority of subjects tested were caused by chloride, iodide and thiosulphate, and in half of the subjects by thiocyanate, while ammonium chloride and sodium bicarbonate gave variable or ineffective results. The increases in bismuth excretion, when present, were not necessarily related to increased diuresis, the urine output being often decreased, though frequently variable, among the groups of subjects receiving the different measures. It appears that certain measures might be employed for increasing the excretion of bismuth, as in poisoning, and for mobilization of tissue bismuth in promoting therapy of syphilis. The simplest, most convenient and economical measures would be the liberal drinking of water and the use of ordinary salt (sodium chloride) in conjunction with the dietary. Various possibilities are discussed.

Treatment of Staphylococcic Infections of Skin by the Bacteriophage.—The result of treatment of fifty-seven patients with staphylococcic infections are reported by Crutchfield and Stout. The clinical results are shown to be much better than in similar cases in which other means of treatment were used. Results cannot be obtained without a bacteriophage that is capable of lysing the infecting organism and transmitting such power.

Archives of Ophthalmology, Chicago

4: 803-984 (Dec.) 1930

Iridencleisis cum Iridotomia Meridionali: Operative Method Both in Acute and in Chronic Primary Glaucoma. S. Holth, Oslo, Norway. —p. 803.
Chronic Retrobulbar Neuritis. W. H. Wilmer, Baltimore.—p. 817.
Opacities of Vitreous. B. Samuels, New York.—p. 838.
Ocular Lesions of Rat Bite Fever in Guinea-Pigs. S. Bayne-Jones and M. L. Lerner, Rochester, N. Y.—p. 858.
Rationale of Denig Transplant in Trachoma: Microscopy of Graft in Two Cases. B. Friedman, New York.—p. 868.
Frequency of Astigmatism. P. C. Kronfeld and C. Devney, Chicago. —p. 873.
Central Nervous System Control of Ocular Movements and Disturbances of This Mechanism. H. A. Riley, New York.—p. 885.
Differentiation of Ocular Manifestations of Hysteria and Ocular Malingering. E. B. Spaeth, Philadelphia.—p. 911.

Archives of Surgery, Chicago

21: 887-1056 (Dec.) 1930. Part I

*Tribrom-Ethanol Anesthesia. R. M. Waters and C. W. Muehlberger, Madison, Wis.—p. 887.
Blue-Domed Cysts and Cancer of Breast. A. McGlannan, Baltimore.—p. 912.
*Skeletal Metastases from Carcinoma of Rectum. A. H. Aufses, New York.—p. 916.
*Value of Drugs in Relief of Ileus. A. Ochsner, I. M. Gage and R. A. Cutting, New Orleans.—p. 924.
Complete Occlusion of Superior Vena Cava by Primary Carcinoma of Lung. A. L. Brown, San Francisco.—p. 959.
Disruption of Pelvis with Luxation of Innominate Bone: Eighteen Cases. C. W. Peabody, Detroit.—p. 971.
Contracture Resulting from Tenotomy. H. K. Davenport and S. W. Ranson, Chicago.—p. 995.
Periosteal Lipoma: Two Cases. E. I. Bartlett, San Francisco.—p. 1015.
Effect of Pericardisotomy on Mechanics of Circulation. C. S. Beck and W. V. Cox, Cleveland.—p. 1023.

Tribrom-Ethanol Anesthesia.—Waters and Muehlberger record their experiences with the clinical administration of this drug in 100 cases. The patients represented a wide range of surgical risks. No advantage appears to result from the use of tribrom-ethanol "fluid" (67 per cent tribrom-ethanol plus 33 per cent amylene hydrate) in place of crystalline tribrom-ethanol for the preparation of anesthetic solutions. The crystalline form of the drug gave more satisfactory results than the amylene hydrate solution. Details of the use of this drug are discussed fully. The authors find justification for the addition of tribrom-ethanol to the present well recognized list of anesthetic drugs.

Skeletal Metastases from Carcinoma of Rectum.—Eight cases of rectal carcinoma complicated by skeletal metastases are reported by Aufses. In the main, the site of the metastases conforms to the original table of frequency as stated by von Recklinghausen. Metastases to the bone in carcinoma of the rectum occurs late in the course of the disease, but with sufficient frequency to make it of clinical significance and to make its early diagnosis of great importance in relief from pain and the prevention of fractures.

Value of Drugs in Relief of Ileus.—The results obtained by Ochsner et al. appear to be in line with those obtained by the more careful and unprejudiced experimental investigators who have previously published reports on the action of pituitary extract. Pituitary extract would not only seem to be an ineffective drug in the treatment for intestinal atony but also would appear to be a dangerous drug in such a condition. The effect of physostigmine on the intestinal tone and motility, according to their investigations, is virtually that which might be expected from a consideration of previous reports, both clinical and experimental. This is the only drug that they have found to be of consistent efficacy, and the fact is stressed that the action of this drug seems to be enhanced in intestinal obstruction, at least in intestinal obstruction no further advanced than that used for the purposes of the present experimental investigation. Choline, acetylcholine, pitocin and peristaltin have proved disappointing. Apparently little dependence can be placed on these therapeutic agencies in the stimulation of either normal or hyperexcitable intestinal musculature. All in all, it would seem that the drug therapy for intestinal atony rests on a rather precarious foundation, and although the results of these experimental investigations are by no means conclusive, they suggest a well nigh complete revision of evaluation of the efficacy of drug therapy in the relief of conditions of intestinal quiescence.

Canadian Medical Association Journal, Montreal

23: 747-894 (Dec.) 1930

Drug Addiction. W. E. Dixon, Grand Mere, Que.—p. 747.
*Lesser Curvature Gastroplasty (Flap Exteriorization of Ulcer: Formation of Gastric Pouch). J. Armour, Montreal.—p. 756.
*Retrodisplacement of Uterus and Correction. W. F. Abbott. Winnipeg. —p. 761.
Infection of Surgical Wounds with Diphtheria Bacilli. F. H. Prissick, Montreal.—p. 767.
Radium Treatment of Cancer of Tongue. S. Cade, London.—p. 771.
Radium and Surgery in Cancer of Tongue. D. Quick, New York.—p. 774.
Radium Treatment of Buccal Carcinoma. G. E. Birkett, Manchester.—p. 780.
Treatment of Carcinoma. F. B. Gurd, Montreal.—p. 784.
Radium in Gynecology. S. Forsdike, London.—p. 792.
Complement Fixation in Scarlet Fever with Immune Serums. F. Green, Montreal.—p. 798.
Silicosis. T. H. Belt, Toronto.—p. 802.
Pregnancy Complicated by Heart Disease and Tuberculosis. W. B. Hendry.—p. 805.
Special Feeding Methods for Infants. A. Goldbloom, Montreal.—p. 807.
Prognosis for Serological Cure in Hereditary Syphilis. E. A. Morgan, Toronto.—p. 811.
After-Dinner Complaints. G. C. Hale, London, Ont.—p. 815.
Administration of Bitters. V. E. Henderson, Toronto.—p. 818.

Gastroplasty of Lesser Curvature.—The method of gastroplasty described here is brought forward by Armour to avoid the possibility of interfering with the motor mechanism of the lesser curvature. It is offered as a possible treatment for lesser curvature and posterior wall ulcer (penetrating posteriorly), as a substitute for the present-day more radical partial gastrectomy, the stomach being left fixed to its bed.

Retrodisplacement of Uterus and Its Correction.—Abbott describes an operation that he has employed successfully in eighty-seven cases. It consists of the transplantation of the round ligament together with the plication of a considerable portion of the broad ligament, this structure being used to help support the uterus.

Florida Medical Association Journal, Jacksonville

17: 253-296 (Dec.) 1930

Peroral Endoscopy: Cases. J. W. Taylor and S. B. Forbes, Tampa.—p. 261.
Radium in Control of Subcutaneous and Mucous Membrane Hemorrhage by Irradiation of Spleen. J. M. Hoffman, Pensacola.—p. 265.
Analgesia and Anesthesia in Obstetrics. A. D. Stollenwerck, Jacksonville.—p. 268.
Bacteriologic Diagnosis of Diphtheria. J. Matthieu, Miami.—p. 270.
Donors of Blood Transfusion. J. E. Boyd and G. W. Richardson, Jacksonville.—p. 272.
Radium in Benign Uterine Hemorrhage. G. Raap, Miami.—p. 273.
Pulmonary Tuberculosis. C. H. Ferguson, Thomasville, Ga.—p. 275.

Georgia Medical Association Journal, Atlanta

19: 503-548 (Dec.) 1930

Nurse and Physician. G. Y. Moore, Cuthbert.—p. 503.
Chronic Lipoid Nephrosis: Case. L. M. Blackford, Atlanta.—p. 505.
Sociological Phase of Medical Profession. W. F. Wells, Atlanta.—p. 510.
Importance of Prompt Treatment of Eye Injuries. W. H. Cabaniss, Athens.—p. 513.

Illinois Medical Journal, Oak Park

58: 393-468 (Dec.) 1930

Economic Factors Relating to Oral Hygiene Progress. H. E. Phillips, Chicago.—p. 407.
School Physician in Community Health Program. A. A. Crooks, Peoria.—p. 412.
Current Menaces of Medical Profession. C. J. Whalen, Chicago.—p. 418.
Domestic Mechanical Refrigeration in Relation to Public Health. A. H. Kegel, Chicago.—p. 424.
School Tuberculosis Physician in Chicago. F. Leavitt, Chicago.—p. 427.
Physical Diagnosis. L. Clendening, Lawrence, Kan.—p. 429.
Etiology and Treatment of Convergent Squint. S. Wolf, Chicago.—p. 433.
Rectal and Perirectal Drainage of Deep Pelvic Abscess. C. J. Drueck, Chicago.—p. 434.
Relation of Colloids of Blood to Clinical Medicine. F. Wright, Chicago.—p. 438.
Agranulocytosis with Case Report. G. Parker, Peoria.—p. 440.
Tularemia: Two Cases. F. J. Jirka, Chicago.—p. 447.
Tularemia: Case. H. R. Keiser, Chicago.—p. 448.
Chronic Otorrhea. W. P. Wherry, Omaha.—p. 449.
Milk Sickness. W. E. Walsh, Morris.—p. 454.
Associated Neurologic Conditions in General Practice. L. H. Sloan, Chicago.—p. 457.
Clinical and Roentgenologic Value of Lateral Roentgenogram of Chest. C. H. Warfield, Chicago.—p. 461.

Journal of Infectious Diseases, Chicago

47: 443-526 (Dec.) 1930

Production of Smooth From Rough Forms of Bacterium Dysenteriae Sonné. S. A. Koser and N. C. Styron, Chicago.—p. 443.
Dissociation of Bacterium Dysenteriae Sonné as Influenced by Variations in Culture Medium. S. A. Koser and N. C. Styron.—p. 453.
Types of Brucella in One Hundred and Twenty-Nine Cases of Undulant Fever. W. N. Plastridge and J. G. McAlpine, Storrs, Conn.—p. 478.
*Bactericidal Effects of High Frequency Sound Waves. O. B. Williams and N. Gaines, Austin, Texas.—p. 485.
Decomposition of Urea by Bacillus Proteus. A. A. Day, W. M. Gibbs, A. W. Walker and R. E. Jung, Chicago.—p. 490.
*Human Carriers of Streptococcus Epidemicus. I. Pilot, B. Hallman and D. J. Davis, Chicago.—p. 503.
Sporadic Septic Sore Throat Due to Streptococcus Epidemicus. I. Pilot and D. J. Davis, Chicago.—p. 507.
*Herpes Encephalitis in Monkeys of Genus Cebus: Observations on Green Streptococcus. E. B. McKinley and M. Douglas, New York.—p. 511.

Bactericidal Effects of High Frequency Sound Waves.—Williams and Gaines have made a study of the lethal effects of supersonic waves on bacteria. It has been possible to kill cells of *Escherichia coli* by exposure in liquid to high frequency audible sound waves of about 8,800 cycles per second. The lethal effects are probably due to a violent agitation set up within the cell by these waves. Lytic action on red blood corpuscles has been observed.

Human Carriers of Streptococcus Epidemicus.—Pilot et al. assert that *Streptococcus epidemicus* is found in the throats of persons during interepidemic periods. The chief habitat appears to be the crypts of the faucial tonsils. Three carriers of *S. epidemicus* had enlarged tonsils, cervical adenitis and arthritic pains. The recognition of these carriers is important because of their possible rôle in the transmission of the disease to others and particularly in the accidental infection of the udder of the cow, with subsequent explosive epidemic sore throat spread through the milk.

Herpes Encephalitis in Monkeys of Genus Cebus.—Herpetic encephalitis has been produced by McKinley and Douglas in five of nine monkeys of the genus *Cebus*. The disease in its acute and subacute form closely resembles human encephalitis. The pathologic lesions are also similar to those of the human malady except for the presence of intranuclear herpetic inclusion bodies in the ganglion cells of the cortex. The disease kills *Cebus* monkeys in from six to eleven days. Secondary invading streptococci were demonstrated in the brain of one monkey. Healthy monkeys receiving an emulsion of the brain of this monkey did not show any streptococci either on cultivation of the brain or on inoculation of it in rabbits. These studies indicate that the green streptococcus is not related to the virus infection in question but that this microbe may, in occasional animals under optimal conditions, invade the central nervous system after the "soil" has been previously prepared by the virus. The authors therefore see no reason for attaching an etiologic relationship to the green streptococcus in such a disease as encephalitis.

Journal of Urology, Baltimore

24: 549-711 (Dec.) 1930

Combined Pyeloscopy: Clinical Value and Technic. T. Hryntschak, Vienna.—p. 549.
Neurosis of Bladder. G. L. Hunner, Baltimore.—p. 567.
Urography: New Method with Physiologic Data. R. E. Cumming, Detroit.—p. 587.
Interpretation of Pyelograms. M. B. Wesson, San Francisco.—p. 595.
Leiomyoma of Kidney. H. L. Kretschmer, Chicago.—p. 617.
*Untoward Results in Bilateral Pyelography. I. J. Shapiro and L. L. Veseen, Chicago.—p. 621.
Papillary Epithelioma of Ureter. P. A. Rohrer, Seattle.—p. 639.
Ureteral Ectopia: Case in Infancy. J. C. Sargent and R. Irwin, Milwaukee.—p. 645.
Primary Carcinoma in Diverticulum of Bladder. G. H. Elwell, Madison, Wis.—p. 649.
Treatment of Urinary Obstruction Due to Malignant Disease of Prostate. J. A. C. Colston, Baltimore.—p. 655.
Case of Thrombophlebitis Following Suprapubic Prostatectomy. W. H. Toulson, Baltimore.—p. 661.
*Metastatic Abscesses of Genito-Urinary Tract. G. W. Fish, New York.—p. 665.
Prostatic Obstruction Caused by Intra-Extra Vesical Hypertrophy: 500 Cases. W. R. Chynoweth, Battle Creek, Mich.—p. 669.
*Isocaine as Urethral Anesthetic. B. H. Hager and A. S. Loevenhart, Rochester, Minn.—p. 681.
Collecting Apparatus for Ureterostomy into Skin of Lower Abdomen. C. P. Mathé, San Francisco.—p. 689.
Modification of Shaw-Young Irrigating Decompression Apparatus. D. M. Davis, Baltimore.—p. 693.
New Cystoscopic Holder. W. A. Councill, Baltimore.—p. 699.

Untoward Results in Bilateral Pyelography.—Five cases are reported by Shapiro and Veseen in which death supervened after and directly ascribable to cystoscopic examinations in which bilateral pyelography was carried out. The mediums used were thorium nitrate 15 per cent, two cases; sodium bromide 25 per cent, one case; sodium iodide 12.5 per cent, two cases. Four postmortem examinations were made. In two cases extensive infection had supervened. In the other two, and probably also in the case in which a postmortem was not done, the cause of death seemed to be the toxic action of the pyelographic medium. The authors contend that pyelography is a diagnostic procedure and as such should not be associated with any mortality. They therefore advocate unilateral pyelography.

Metastatic Abscesses of Genito-Urinary Tract.—The case of metastatic abscesses of the genito-urinary tract cited by Fish required a nephrectomy, two nephrotomies, and drainage of a prostatic and of a peri-urethral abscess. Perhaps the most interesting feature of the case is that the abscesses were confined to the urinary tract. There was destruction of at least half of the remaining kidney, but the patient made a good recovery. He entirely regained his weight, returned to rather hard work in the country, had a normal blood urea and clear urine, and was in all respects a well man.

Isocaine as Urethral Anesthetic.—Hager and Loevenhart are of the opinion that the degree of anesthesia obtained with isocaine compares favorably with that obtained with the use of cocaine. A 1 or 2 per cent solution of isocaine appears to be adequate to permit of satisfactory urethral instrumentation. The satisfactory anesthesia coupled with the lessened toxicity, isocaine being three tenths as toxic as cocaine, indicates a high therapeutic index for isocaine as a surface anesthetic for the urethral mucosa.

New England Journal of Medicine, Boston

203: 1181-1223 (Dec. 11) 1930

Primary Torsion of Great Omentum. E. D'Errico, Boston.—p. 1181.
Nursing Situation. M. A. Burgess.—p. 1189.
Hospital as Means of Educating Nurses. J. B. Howland, Boston.—p. 1193.
Public Health Nursing. S. Rushmore, Boston.—p. 1195.
Auto Blood Transfusion. G. Elliott, Boston.—p. 1197.
Perforation of Cecum by Foreign Bodies: Case Simulating Appendicitis. P. W. Vestal, New Haven, Conn.—p. 1199.
Does Follow-Up Social Service Pay in Venereal Disease Clinic? H. L. Leland, Lowell, Mass.; N. A. Nelson, Boston, and A. I. Gorman.—p. 1200.

Occupational Therapy and Rehabilitation, Baltimore

9: 315-415 (Dec.) 1930

Occupational Therapy in European Mental Hospital, Ranchi, India. A. K. Mukherji, Ranchi.—p. 323.
Economic Factors of Occupational Therapy. J. Van Driel.—p. 335.
Occupational Therapy. W. R. Dunton, Jr.—p. 343.
Occupational Therapy at Muirdale Sanatorium. I. Grant.—p. 351.
Ethics for Occupational Therapist. N. McKee.—p. 357.
Philadelphia School of Occupational Therapy. M. T. Paul, Philadelphia. —p. 361.
Adjustable Stool Chair. L. J. Haas, White Plains, N. Y.—p. 367.

Oklahoma State Medical Assn. Journal, Muskogee

23: 325-352 (Oct.) 1930

Toxic Goiter. L. D. Long, Oklahoma City.—p. 325.
Stricture of Rectum. V. K. Allen, Tulsa.—p. 328.
Vesicovaginal Fistula. J. Z. Mraz, Oklahoma City.—p. 333.
Urologic Diagnosis in General Surgery. B. A. Hayes, Oklahoma City. —p. 335.
Spinal Anesthesia. W. H. Livermore, Chickasha.—p. 339.
Amytal as Anesthetic. W. G. Maddox, Dallas, Texas.—p. 341.
Anesthesia from Surgical Viewpoint. F. L. Carson, J. E. Hughes, Shawnee.—p. 343.

Physical Therapeutics, New York

48: 577-640 (Dec.) 1930

Electrosurgical Progress. E. N. Kime, Indianapolis.—p. 577.
Clinical Indications for Direct or Constant Current. J. E. G. Waddington, Detroit.—p. 591.
Lupus Erythematosus. W. E. Montgomery, Pueblo, Colo.—p. 596.
Common Skin Affections. E. N. Kime, Indianapolis.—p. 599.
Uses and Abuses of Physiotherapy Modalities. L. J. Kosminsky, Texarkana, Ark.—p. 616.

Public Health Reports, Washington, D. C.

45: 2979-3040 (Dec. 5) 1930

Venereal Disease Among Coast Guard Enlisted Personnel During Fiscal Year 1929. W. W. King.—p. 2979.
*Miliary Lung Disease Due to Unknown Cause. R. R. Sayers and F. V. Meriwether.—p. 2994.

45: 3179-3235 (Dec. 26) 1930

Health and Hospital Services in Alameda County, Calif. J. W. Mountin. —p. 3179.
Biochemical Studies on Antineuritic Vitamin. A. Seidell and M. I. Smith.—p. 3194.

Miliary Lung Disease Due to Unknown Cause.—Sayers and Meriwether report the work done in a clinic established at Picher, Okla., for the study and control of silicosis and tuberculosis among the miners. Physical examination, including roentgen examination of the chest, is made of the men prior to employment and at least once yearly thereafter. A total of 18,285 individuals had been examined up to and including December, 1929. About 125 cases of typical miliary lung disease were found by roentgen examination among these 18,285 individuals during routine physical examination. A majority of the affected persons did not have sufficient symptoms to cause them to stop work or to seek medical aid. The most characteristic finding was a large number of discrete, dense, shotlike spots scattered over the lung areas. Tubercle bacilli were present in only two of the eighty-eight cases in which an examination was made of the sputum. Unstained smears of thirty-one cases (all those examined) were positive for fungi. Two types of fungi were identified—*Aspergillus fumigatus-fisheri* and *Aspergillus niger*. Ten cases tested with antigen of *Aspergillus fumigatus-fisheri* gave negative reactions; six cases tested with *Aspergillus niger* all gave positive reaction. The authors are of the opinion that thirty-eight cases reported by Sutherland as presenting "miliary calcification of the lungs" are probably instances of the same condition that was found at Picher. In addition, they suggest that these miliary calcifications may be due primarily to fungous infection.

South Carolina Medical Assn. Journal, Greenville

26: 295-318 (Dec.) 1930

How Eye Was Saved by Plastic Surgery. L. O. Maudlin, Greenville. —p. 299.
Infant Feeding. C. M. Burpee, Augusta.—p. 300.
New Physical Sign in Pulmonary Embolism Occurring During Labor. J. R. Young, Anderson.—p. 305.
Treatment of Empyema in Children. W. H. Prioleau, Charleston.—p. 308.

Southern Medical Journal, Birmingham, Ala.

23: 1079-1188 (Dec.) 1930

*Intravenous Cholecystography and Liver Function Determination: Clinical and Roentgenologic Value. S. R. Miller and C. A. Waters, Baltimore.—p. 1079.
Simultaneous Bilateral Pneumothorax. L. J. Moorman, Oklahoma City. —p. 1088.
Etiology of Middle Ear Suppuration. M. M. Cullom, Nashville, Tenn. —p. 1091.
*Treatment of Hemorrhoids. M. C. Pruitt, Atlanta, Ga.—p. 1098.
Primary Lymphosarcoma of Thymus with Metastases Below Diaphragm. R. E. Knutti, Nashville, Tenn.—p. 1104.
Bismuth Treatment of Cardiovascular Syphilis. L. M. Blackford, Atlanta, Ga.—p. 1108.
Brass Paper Fastener in Bronchus. M. P. Stiles, Birmingham.—p. 1113.
Treatment of Common Injuries of Knee Joint. G. A. Caldwell, Shreveport, La.—p. 1114.
Radium Treatment of Early Epithelioma of Lip. H. Hailey, Atlanta, Ga.—p. 1121.
Hairy Tongue Following Adjacent Radiation. M. T. Van Studdiford, New Orleans.—p. 1125.
Treatment of Ringworm Infection of Feet with Ethyl Chloride Spray. K. P. A. Taylor, Havana, Cuba.—p. 1128.
Description of Injection Method of Studying Circulation. J. W. Moore, W. F. Hamilton, J. M. Kinsman and R. G. Spurling, Louisville, Ky. —p. 1131.
*Diagnosis and Treatment of Anemias of Infancy. H. W. Josephs, Baltimore.—p. 1135.
Hypotension in South. W. T. Vaughn and W. R. Graham, Richmond, Va.—p. 1140.
*Distinction Between Appendical Allergy and Appendicitis in Three Hundred and Ten Appendixes. J. A. McIntosh, Memphis, Tenn.—p. 1147.
Clinical Study of 3,800 Georgia Children. C. B. Barrett, Atlanta, Ga. —p. 1150.
Syphilis of Stomach. L. L. Hill, Jr., New Orleans.—p. 1153.
Treatment of Obesity. W. M. Ballinger, Washington, D. C.—p. 1155.

Intravenous Cholecystography and Determination of Liver Function.—Although it is clearly recognized by Miller and Waters that their series of 131 cases is a small number on which to base any positive conclusions, they feel that the evidence produced is of value so far as it strengthens the weight of opinion in favor of intravenous, as compared with oral cholecystography. The dye has been found comparatively nontoxic, since few disagreeable reactions have been encountered, and none of them of an at all alarming nature. The procedure is not technically difficult or particularly time consuming, three injections being readily given within the space of an hour in a private office. The cholecystograms are unquestionably far superior to those obtained very often after oral administation of the dye. Even though the intravenous method is admittedly the superior one, it is probably true that its uniform adoption will be slow. The method, simple as it is, should in no sense be exploited by those not thoroughly proficient in the technic of intravenous therapy. At least it can be asserted that no internist can accept the report "gallbladder not visualized" as conclusive roentgen evidence of disease of the biliary tract when such films have been obtained following oral administration of the dye. Confirmation or denial of such a report, following intravenous injections, is mandatory, particularly when the clinical picture of gallbladder disease is by no means clear

Treatment of Hemorrhoids.—Pruitt stresses the point that, since there are many types of piles, no one method of treatment is suitable for all cases. Each patient should be given sufficient examination to determine the type of the pile present. The type of treatment should be based on observations resulting from the complete examination of the individual case and not on the patient's diagnosis. It should not consist of a prescription for an ointment, as is customy with many busy physicians.

Treatment of Anemias of Infancy.—Josephs feels that medicinal iron given in sufficiently large amounts has a greater effect in raising hemoglobin than food iron. The results with copper as a supplement to iron are highly suggestive. Little need be expected from the use of copper and iron in premature babies and during the course of an infection. In regard to liver as a supplement to iron, it has succeeded where copper has failed, but, on the other hand, liver over a prolonged period of time is disagreeable for older children and somewhat expensive, and it would be quite satisfactory if copper should prove of value as an efficient adjunct to iron in the treatment of anemia.

Distinction Between Appendical Allergy and Appendicitis.—Data, presented by McIntosh, support the concept of the existence of appendical allergy and suggest its incidence among 310 surgically removed appendixes.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 1073-1110 (Dec. 27) 1930

*Symptoms and Pathogenesis of Hemorrhagic Diathesis. H. L. Tidy.—p. 1073.
Nonfilarial Elephantiasis. D. J. Harries.—p. 1079.
Placental Hormones. J. B. Collip.—p. 1080.
*Clinical Use of Certain Placental Extracts. A. D. Campbell and J. B. Collip.—p. 1081.

Symptoms and Pathogenesis of Hemorrhagic Diathesis.—Tidy asserts that the hemorrhages in the hemorrhagic diathesis are primarily due to increased permeability of the capillary endothelium. Blood platelets normally protect the capillary endothelium, and the diminution in number observed in the hemorrhagic diathesis is secondary to this action. Escape of plasma from the vessels accounts for certain of the symptoms, especially abdominal colic. Hemorrhages from a single site—for example, hematuria—may occur. There is no constant characteristic change in the blood cells.

Clinical use of Certain Placental Extracts.—The observations reported by Campbell and Collip deal in the main with the possible therapeutic value of the 85 per cent alcohol-soluble fraction. A few clinical experiments with the so-called anterior pituitary-like fraction of the placental extract (85 per cent alcohol precipitate) are included. One hundred and twenty-three cases of deranged ovarian function as judged clinically have been treated and observed for periods varying from three to nine months. All the patients investigated were apparently normal individuals, and pelvic examination did not reveal gross or obvious pathologic conditions in the conformation or size of the uterus or its adnexa. A dose corresponding to 75 Gm. of placenta daily, given in divided doses in water or orange juice before meals, has been used in the majority of cases. There are individuals who do not tolerate the extract well. In any case in which untoward symptoms, such as nausea or vertigo, have been observed, the dose has been temporarily reduced until tolerance was acquired. According to their experience, the use of this extract does not seem to have any untoward effect on impregnation and gestation. It is worthy of note that four patients became pregnant while under treatment for ovarian dysfunction. From thirty-six to forty-eight hours after the institution of therapy, some patients volunteered that they experienced a feeling of general well being and of mental alertness. No effect on libido was reported. As controls, ten women with normal menstrual cycles were submitted to treatment for three months without any alteration being noted either in the length of the interval or in the duration of the epoch. The dosage used in cases of dysmenorrhea was, as a rule, the equivalent of 25 Gm. of placenta administered daily for approximately seventeen days, beginning with the cessation of a menstrual period. During the week preceding menstruation (twentieth to twenty-eighth day) the dose was raised to 75 Gm. daily, and treatment was continued until the onset of the flow and then stopped for a period of about a week. Other individuals with normal cycles obtained relief when treated for seven days preceding the anticipated period. The second principle (85 per cent alcohol precipitate, or the anterior pituitary-like substance of placenta) was employed in metrorrhagia. The results in this small group of cases have been most encouraging. The extract used in these cases contained approximately 10 rat units per cubic centimeter and was administered subcutaneously. No enlargement of breasts or milk secretion occurred with the administration of this hormone. It should be noted here that the diagnosis is essential and that uterine exploration should always precede the treatment.

1: 1-24 (Jan. 3) 1931

Radium in Service of Surgery. H. S. Souttar.—p. 1.
General Practitioner in Antenatal Work. W. H. F. Oxley.—p. 5.
Accessory Lobe of Azygos Vein. H. P. Nelson and G. Simon.—p. 9.
Knee Jerk and Its Variation an Indication for Sympathetic Ramisection or Trunk Section. N. D. Royle.—p. 11.
*Convelascent Serum in Prophylaxis of Measles. D. N. Nabarro and A. G. Signy.—p. 12.
Measles in Public School. L. R. Lempriere.—p. 14.

Convalescent Serum in Prophylaxis of Measles.—Nabarro and Signy report their experiences in this field. Originally they used 3 cc. for children up to 3 years and 5 cc. for children over 3. This has never been strictly adhered to, as they increase the dose for big children and for adults, and also if the incubation is well advanced. They have now increased the doses to 5 and 7 cc. and believe that this is a more adequate and satisfactory dosage. All the injections are made intramuscularly into the buttock. Serum has been tried in treatment of severe measles without success, because the antibody content is not sufficiently high and enormous doses would be required to have any effect. For the same reason the serum is of no value for the blanching of a rash, although it is sufficiently strong to prevent the appearance of the rash in an area if injected before the rash appears generally (Debré's phenomenon). Whole blood may be used instead of serum, and in this case the blood of a convalescent patient is injected intramuscularly into the recipient, the dose being double the serum dose. They have injected serum in 586 cases, of which 461 injections were made at the Children's Hospital following ward infections, and 125 were cases from practitioners in various parts of the country following home or hospital infections. In the hospital series there were 14 failures, or 3 per cent, and the outside cases 7 failures, or 5.6 per cent. The "failures" in both series include several injected after the fifth day, and are almost all extremely mild cases.

Journal of College of Surgeons of Australasia, Sydney

3: 151-308 (Nov.) 1930

Surgicopathological Interpretation of Roentgen-Ray Appearances of Antral (Highmore) Diseases. R. G. Brown.—p. 351.
Pathology of Chronic Suppurative Antral Sinusitis. D. A. Welsh and R. G. Brown.—p. 193.
Low Backache. C. W. B. Littlejohn.—p. 201.
Carcinoma of Kidney. K. Inglis and E. B. Jones.—p. 225.
*Chronic Appendicitis. L. R. Chandler.—p. 235.
*Epithelial Proliferation and Metaplasia in Chronic Cholecystitis. E. S. J. King.—p. 245.
*Compensatory Hyperplasia of an Accessory Lingual Thyroid. R. A. Willis.—p. 257.
Surgery of Biliary Tract. H. R. G. Poate.—p. 264.
Melanosarcoma of Spinal Arachnoid. F. G. Bell.—p. 279.
Hypertrophic Spinal Meningitis. P. S. Foster.—p. 280.
Paget's Disease of Glans Penis. M. P. Susman.—p. 282.
Intussusception Due to Secondary Melanocarcinoma. K. Ross.—p. 283.
Carcinoma of Lung of Long Duration. L. H. Ball.—p. 286.
Skeletal Metastases from Thyroid Carcinoma. D. B. Rosenthal and R. A. Willis.—p. 290.
Multiple Myeloma. R. A. Willis.—p. 295.

Chronic Appendicitis.—Chandler asserts that, if a correct diagnosis has been made, appendectomy should result in a complete cure of every case of chronic appendicitis. The most reliable proof of the accuracy of the diagnosis is the end-result record. The patient who is promptly and permanently relieved following a simple appendectomy did have appendicitis and the patient who is not cured following the operation probably did not have an appendix which was responsible for his complaints. Thus the burden of responsibility is placed on the diagnosis.

Chronic Cholecystitis.—A routine study made by King of a number of cases of chronic cholecystitis reveals a remarkable degree of proliferation of the epithelium of the organ. Epithelial structures are found frequently in the muscular and subperitoneal coats. The characteristic form is the glands of Luschka. The proliferation may cause macroscopic thickening of the wall and resemblance to carcinoma, a condition described as cholecystitis cystica. Definite features distinguish it from carcinoma. Interesting changes in the epithelium occur in a proportion of cases with the formation of mucous glands and glands resembling the glands of the pylorus and the glands of Brunner. Squamous epithelium is rare in the gallbladder (though found in two cases of this series), but squamous carcinoma is not very uncommon. Carcinoma was found in fifteen cases of those examined (6 per cent).

Accessory Lingual Thyroid.—Willis describes a case in which a "latent" primary carcinoma of the base of the tongue produced massive cervical metastases diagnosed as "branciogenic carcinoma." These metastases destroyed the thyroid gland. Adequate compensatory enlargement then occurred of a lingual thyroid that had been previously unsuspected, which drew attention to the "latent" primary carcinoma in the same situation.

Journal of Obst. & Gynec. of Brit. Empire, Manchester

37: 753-991 (Winter) 1930

Double Monsters: Their Circulatory System and Other Anatomic Abnormalities; Complications in Labor. A. L. Mudaliar.—p. 753.
Three Hundred Cases of Abortion. T. V. Pearce.—p. 769.
Treatment of Eclampsia by Improved Prophylactic Method with Telephonic Consultations. Stroganoff.—p. 807.
Calcified Ovarian Tumor. M. Salmond.—p. 821.
Atresia Vulvae Superficialis. M. Salmond.—p. 824.
Five Cases of Rupture of Uterus During Labor. T. M. Healy.—p. 827.
Dystocia Due to Idiopathic Dilatation of Fetal Urinary Tract. K. Edgecombe.—p. 832.
Difficult Midwifery Under Spinal Anesthesia. J. W. Hunter.—p. 835.
Twins in Primiparas. K. Das.—p. 841.

Lancet, London

2: 1383-1438 (Dec. 27) 1930

Conception of "Nervous Disorder." M. Culpin.—p. 1383.
*Treatment of Lobar Pneumonia by Felton's Serum. J. Cowan, R. Cruickshank, D. P. Cuthbertson, J. Fleming and A. W. Harrington. —p. 1387.
*Lobar Pneumonia: Treatment by Concentrated Antiserum. By Physicians to Royal Infirmary.—p. 1390.
*Acute Myelogenous Leukemia. J. H. Easton.—p. 1394.
*Approaching Appendix Through Transverse Incision. A. J. Cokkinis. —p. 1396.
Two Unusual Cases of Suicide: (1) Two Gunshot Wounds in Head; (2) Poisoning with Binoxalate of Potash. W. Stewart.—p. 1397.

Treatment of Lobar Pneumonia by Felton's Serum.—On the basis of clinical experience, Cowan et al. commend Felton's serum as an addition to the other agents used in the treatment of pneumonia. Felton's serum is active only against infections of types I and II; it has no therapeutic value in type III and group x infections. Of the fifteen type I infections one patient died; of the twenty-six type II, two patients; of the type III, the only patient; of the thirteen group x infections, two patients. The mortality among 856 untyped cases treated without serum up to 1930 was 18.46 per cent. The mortality of typed serum treated cases (in 1930) was 10.3 per cent.

Lobar Pneumonia: Treatment by Concentrated Antiserum.—The evidence submitted in this report suggests that the administration of Felton's concentrated antiserum is of distinct benefit in the treatment of lobar pneumonia due to organisms of types I and II. Its action appears to be greater in the case of type I pneumonias. The records show that there were fewer deaths among the patients who received serum. Serum treatment seems to lessen the severity of the disease and undoubtedly shortens the febrile period in a proportion of cases. Many patients appeared to become less ill and more comfortable as a result of the injections. Anaphylactic phenomena were observed in two patients after the first dose of serum, although in both cases the preliminary eye test was negative.

Acute Myelogenous Leukemia.—Easton suggests that in cases of acute leukemia the infection is a virulent one—in two cases hemolytic streptococci were isolated—and that the individual has strong powers of resistance to begin with but that it is in the great majority of cases overcome in the end. The fact that it commonly attacks healthy young men would support this. That every case of acute leukemia is due to an infection is difficult to imagine, far more so to prove, but Easton suggests that this causation is more frequent than is generally supposed.

Approaching Appendix Through Transverse Incision.—The incision made by Cokkinis is absolutely horizontal and extends from the superior anterior iliac spine inward for 1½ to 3 inches, according to the age and build of the patient. The external oblique aponeurosis is exposed and is split in the line of the skin incision and the muscular fibers of the internal oblique are exposed. These fibers are here running almost transversely and a line of separation is made with a blunt instrument. The transversalis is then split in a similar manner and the transversalis fascia divided in the same direction. The peritoneum is now exposed, and at the outer angle of the wound this can be seen coming off the iliac fossa to the anterior abdominal wall in the form of a lateral reflection, which stands out as a definite fold. It is picked up and incised horizontally, a 1½ inch opening usually being sufficient. The cecum will be found immediately under the wound and can be delivered easily, except when anchored by adhesions. An adherent subcecal, retrocecal, retrocolic or ileac appendix can be freed and brought out with greater ease than through the more medial oblique or vertical incisions in common use. In the presence of a localized abscess, shut off from the general peritoneal cavity, the incision extends from 1½ to 2 inches inward from the superior anterior spine. After the aponeurosis has been divided and the muscles have been split, the reflection of peritoneum coming off the iliac fossa is sought and peeled inward off the iliacus until the abscess can be felt from behind. It is then opened with the finger or with sinus forceps and cleaned out with swabs on holders. A drainage tube is inserted into the abscess cavity and brought out through the outer end of the wound. With the patient lying a little over on the right side, excellent drainage is provided. In this way all danger of soiling the peritoneum is avoided.

Medical Journal of Australia, Sydney

2: 809-840 (Dec. 20) 1930

*Vitamin D Administration in Parathyroid Deficiency Following Thyroidectomy. F. S. Hansman.—p. 809.
Radium Therapy in Cancer of Nose, Larynx and Esophagus. H. M. Moran.—p. 814.
Action of X and Gamma Radiation on Aqueous Solutions of Iodine and Potassium Iodide. G. Harker.—p. 817.
Gunshot Wound in Abdomen: Pea Rifle Bullet in Gallbladder. E. S. Meyers.—p. 822.
Sprue and Amebic Dysentery. H. Crawford and N. M. Gutteridge.—p. 823.

Vitamin D in Parathyroid Deficiency Following Thyroidectomy.—Subsequent to thyroidectomy or to excessive radiotherapy to the thyroid gland, the following symptoms may develop as a manifestation of parathyroid imbalance: tetany, cramps, numbness, tingling sensation, a feeling of "pins and needles," grave depression, pronounced irritability, cravings for food, excessive appetite, marked gain in weight, pallor, and undue fatigue. Control experiments definitely rule out the possibility of these symptoms being due to hypothyroidism. Hansman states that all these symptoms disappear on the administration of relatively large doses of viosterol. Six cases are recorded which illustrate the response to vitamin D.

Practitioner, London

126: 1-192 (Jan.) 1931

Acute Abdominal Diseases. L. Moynihan.—p. 5.
Functional Diseases of Heart. R. O. Moon.—p. 13.
Heart Failure and Treatment. M. Campbell.—p. 21.
Variations in Arterial Pressure and Control. J. F. H. Dally.—p. 39.
Early Diagnosis and Treatment of Pulmonary Tuberculosis. L. S. T. Burrell.—p. 47.
Chronic Bronchitis. G. Marshall.—p. 59.
Treatment of Influenza. C. B. Levick.—p. 65.
Common Colds and Nasal Catarrh. W. J. Harrison.—p. 75.
Chronic Indigestion. A. F. Hurst.—p. 84.
Constipation. S. W. Patterson.—p. 94.
Pyorrhea Alveolaris. A. T. Pitts.—p. 105.
Treatment of Hemorrhoids. W. B. Gabriel.—p. 114.
Removal of Eystrain as Preventive Treatment. E. Clarke.—p. 121.
Depression. H. Crichton-Miller.—p. 130.
Sprains and Strains. N. Hallows.—p. 139.
Physiotherapy in Rheumatism. F. H. Humphris.—p. 147.
Treatment of Fibrositis. W. Edgecombe.—p. 157.
Eczema. H. D. Haldin-Davis.—p. 167.
Acne Vulgaris. H. C. Semon.—p. 176.

Tubercle, London

12: 145-192 (Jan.) 1931

*Tuberculous Morbidity and Mortality Among House Contacts of Sputum-Positive Cases in North Worcestershire. H. M. Turner.—p. 145.
Pulmonary Tuberculosis: Assessment. S. L. Cummins.—p. 155.
Asbestosis Bodies in Feces in Case of Pulmonary Asbestosis. S. R. Gloyne.—p. 158.

Tuberculous Morbidity and Mortality Among House Contacts of Sputum-Positive Cases in North Worcestershire.—Turner outlines the actual results of tuberculous infection in sputum-positive households in a certain geographic area with a population of 160,000. Evidence is produced to establish the fact that house contacts of sputum-positive cases of phthisis suffer both an incidence rate of, and a death rate from, tuberculosis significantly greater at all ages than the corresponding rates for the general population. In view of these facts it is strongly urged that, from the point of view of tuberculosis schemes, all contacts of sputum-positive cases are themselves potential cases of tuberculosis. For this reason it is essential

that they should be periodically examined. Such examination is, in itself, not of great value, unless on the first signs or symptoms of loss of health (which cannot be diagnosed as some other definite clinical condition) the contact can be given a proper course of the appropriate treatment. The author advocates that powers should be given to make preventive treatment available for the contacts of sputum-positive cases, before the contact has reached the stage of being "notifiable" according to the generally accepted standards.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

(54): 1627-1662 (Nov. 24) 1930

Blood Transfusion in Typhoid. J. Rouillard.—p. 1628.
*Multiple, Profuse and Severe Hemorrhages in Course of Typhoid Checked by Blood Transfusion. V. Audibert, Aviérinos and A. Raybaud. —p. 1630.
Undulant Fever: Treatment with Acriflavine Hydrochloride: Two Cases. Le Chuiton and Négrié.—p. 1633.
Pulmonary Complications in Typhoid. G. Caussade and A. Tardieu. —p. 1635.
Transparietal Injection of Iodized Poppy Seed Oil for Study of Pulmonary Drainage. Ameuille and Darbois.—p. 1643.
Spontaneous Cure of Embolic Putrid Abscess of Right Superior Lobe. J. Hutinel and R. Kourilsky.—p. 1645.
Polythrombotic Form of Superacute Meningococcemia. J. Troisier and Y. Boquien.—p. 1654.

Severe Hemorrhages in Typhoid Checked by Blood Transfusion.—Audibert et al. report a case of severe hemorrhage in the course of typhoid in which the patient was cured by blood transfusion. The typhoid symptoms began with an angina that lasted about three weeks. Fever then set in, and within a week the patient's temperature had reached 40 C. (104 F.). The fever then abated. Three weeks later the temperature of the patient was normal and she thought she was cured. Suddenly, however, she began to bleed, first at the gums, and then through the skin, the kidneys and the conjunctivas; her skin was covered with purpuric patches. The hemorrhages became more intense and the patient seemed to be bleeding to death. A transfusion of 300 cc. of blood was given. The hemorrhage was completely checked within a few hours and the general condition of the patient was greatly improved. Four days later a second transfusion of 200 cc. was given. After a few days the purpura was scarcely visible and the patient was soon able to leave the hospital. The authors consider this case significant because of the rarity of such a syndrome in which multiple, profuse and severe hemorrhages appear in the last stages of a case of typhoid. It is also especially noteworthy because of the apparently fatal prognosis and the striking therapeutic effects of the blood transfusions.

Bulletins et Mém. de la Soc. Nat. de Chirurgie, Paris

56: 1239-1267 (Nov. 22) 1930

Combination of Long Standing Mediocarpal Luxation, Fracture of Scaphoid and Trapezometacarpal Luxation. R. Tillier.—p. 1240.
Retrolunar Carpal Luxation with Fracture of Scaphoid. P. Masini. —p. 1243.
Hypertonic Solution of Sodium Chloride in Intravenous Injection in Severe Intestinal Occlusion and in Cachexia from Ovarian Cyst. Lecercle.—p. 1246.
*Effects of Ligature of Inferior Thyroid Artery on Calcemia and Functional Symptoms in Ankylosis. R. Leriche and A. Jung.—p. 1249.
Prevention of Postoperative Pulmonary Complications by Enemas of Creosoted Milk. A. Basset.—p. 1257.

Effects of Ligature of Inferior Thyroid Artery on Calcemia and Functional Symptoms in Ankylosis.—Leriche and Jung report a case of multiple ankylosis of twelve years' standing. The spinal column was completely rigid; only the slightest movements of rotation and flexion of the head were possible. The ankylosis had affected other articulations also for two years and the patient was almost unable to move at all and had intense pain. Since hypercalcemia was present, the authors decided on parathyroidectomy. They removed a small body on each side, believing them to be the inferior parathyroids. One of the fragments, however, was merely a bit of fatty tissue. Immediately after the operation the patient showed a marked improvement: the pain disappeared and he was able to move his arms, to turn himself in bed, and finally to stand erect. The calcemia was reduced from 0.116 to about 0.09 Gm. Six weeks later, however, the ankylosis set in again and the patient gradually returned to his former condition, although the calcemia remained normal. The authors feel that the unfavorable developments in this case are not so discouraging as they appear at first because of the long duration of the disease. They consider it encouraging that any amelioration should have been produced. This case illustrates the extreme difficulty of identifying the parathyroids. The authors report a second case in which the ankylosis had begun five months earlier. Before attempting to identify and isolate the parathyroids they divided the inferior thyroid artery between two ligatures, one of them close to the branches of the artery extending to the superior and inferior parathyroids. Although the fragment that they removed, as in the first case, did not prove to be parathyroid, the ligatures served to decrease the glandular secretion and the patient's condition was immediately improved. The calcemia was lowered, the pain disappeared and, wherever the ankylosis was not complete, mobility of the joints was restored. The amelioration has persisted for four months. The authors feel that this case demonstrates the efficacy of parathyroid operations performed sufficiently early in the development of the disease.

Paris Médical

2: 473-484 (Nov. 29) 1930

*Intervention of an Individual Factor in Local Reactions Produced by Injections of Camphor. H. Busquet and C. Vischniac.—p. 473.
Treatment of So-Called Synovial Cysts. Mutel.—p. 475.
Tranquil Apnea in a Hyperthermic New-Born Infant. C. Massias. —p. 478.
Treatment of Enteroneurosis. P. Coulouma.—p. 480.

The Individual Factor in Reactions from Injections of Camphor.—By means of a number of experiments, Busquet and Vischniac show that the local reactions sometimes produced by subcutaneous injections of camphor are not the result of the olive oil in which the camphor is administered, nor of the accidental contamination of the material injected, nor of the faulty technic nor of any properties of the camphor itself. The symptoms are evidently caused by an individual predisposition of certain patients. The authors proved experimentally that an abnormal circulatory condition in the area of absorption of the medicament favors the production of inflammatory reactions by the injection of camphor in either oily or aqueous solution.

Schweizerische medizinische Wochenschrift, Basel

60: 1097-1120 (Nov. 22) 1930

Problems of Comparative Geographic Pathology. M. Askanazy.—p. 1097.
*Prophylaxis of Divers' Disease. Blattner and Zangger.—p. 1104.
Experimental Investigations with B C G. W. Silberschmidt.—p. 1106.
Observations on Ixodes Ricinus. G. Peillon.—p. 1109.
Localization of Ixodes Ricinus. Pfisterer.—p. 1110.
Obstetrics in Rural Districts. R. Beck.—p. 1110.

Prophylaxis of Divers' Disease.—Blattner and Zangger point out that the waterworks that some cities in Switzerland have at deep lakes sometimes make it necessary for divers to work at a depth of about 40 meters. In rendering expert opinion on the death of a diver, the authors stress that the diver had risen to the surface rapidly and that the extreme difference in pressure had caused the hemorrhages and death. In order to avoid such occurrences, the divers should be given instructions, so that they will understand and adhere to the rules that are given for their safety. The authors think that, in order to avoid similar fatalities as the one described, a high pressure apparatus should be kept in readiness wherever divers have to work at depths of more than 12 meters, so that if the diver is forced to come up rapidly the apparatus will be there to help in the adjustment of the pressure and thus prevent hemorrhages and death.

Archivio Italiano di Chirurgia, Bologna

27: 413-536 (Oct.) 1930

Physiopathology and Pathologic Anatomy of Ureters Affected with Calculosis. P. Pieraccini.—p. 413.
Treatment of Tuberculous Cystitis. G. Pieri.—p. 454.
*Inguinal Hernia of Stomach. N. Novaro.—p. 483.
*Renal Changes Following Cauterization. R. Palma.—p. 509.

Inguinal Hernia of Stomach.—Novaro describes in detail a case of mediogastric strangulated hernia and, in that connection, gives a survey of inguinal hernia of the stomach, reporting chronologically the nineteen cases described in the literature and studying the etiology, the pathogenesis, the pathologic anatomy, the symptomatology, the diagnosis, the course, the

prognosis and the treatment. He treats also the various complications: strangulation, stenosis, obstruction, adhesions, inflammation.

Renal Changes Following Cauterization.—Palma studies, first, the changes that occur in the kidneys as a result of their cauterization; second, whether, as a result of circumscribed cauterizations, lesions develop in more distant parts, and, third, whether, as a result of the cauterization of one kidney, changes are brought about in the opposite kidney. From his researches it appears that cauterization of the kidneys constitutes a trauma not always compatible with the life of the animal, even though the intervention involves only one of the kidneys, the other being intact. Even superficial lesions damage the whole organ in its anatomic integrity. Aside from the immediate damage, the cauterizations are the cause of remote lesions, owing to the fact that a phase of connective tissue organization follows the initial lesions. The cystic dilatation of the renal tubules may be regarded as a direct consequence of the sclerosis of the connective tissue, which causes circulatory disturbances through the lesions of the vessel walls and constriction of the renal tubules. As a result of the cauterization of one kidney, severe lesions of the opposite kidney develop, although they are transient. As to the explanation of these lesions, the author does not favor so much the idea that they are due to the action of a specific toxin, developing from the products of autolysis of the cauterized renal tissue, on the opposite kidney, but thinks rather that the changes are associated with a toxic action similar to that which any other toxic substance would excite if introduced into the organism and eliminated through the kidneys.

Clinica Chirurgica, Milan

33: 1099-1206 (Oct.) 1930

New Types of Apparatus for Anesthesia with Combined Gases. C. Lorenzetti.—p. 1099.
Endothelioma of Breast. O. Amorosi.—p. 1106.
*Researches on Postoperative Hyperglycemia. B. Bonomini.—p. 1119.
*Negative Experimental Observations on Tar Cancer. U. Fabris.—p. 1148.

Researches on Postoperative Hyperglycemia.—Bonomini, in summarizing the outcome of his research, states that the course of the curve of postoperative hyperglycemia appears in a certain relation with the behavior of physiologic factors that regulate the glycemia and also with organic changes due to diseases of a surgical nature. The influence of the emotions on the curve is, however, slight. The relation between hyperglycemia and postoperative acidosis is frank but not so intimate as some authors make it appear. Also a relation with postoperative hyperuremia is evident. No relation, however, was found between the hyperglycemia and the duration of the anesthesia and the acetonuria. The operative hyperglycemia has been, in the author's cases, more or less intense but always of short duration. It reaches its culmination toward the end of the anesthesia and decreases steadily, disappearing usually after twenty-four hours. It is prevented by the intravenous injection of a sufficient quantity of insulin (from 10 to 15 units).

Negative Experimental Observations on Tar Cancer.—Fabris, having never been able to produce tar cancer after numerous experiments on about 600 animals, holds that the prolonged irritating action of tar (coal tar, Norway tar) may prepare a terrain adapted to the development of blastomas in the sense of provoking an antiblastic dysfunctioning in the various tissues of the organism. For the final causation of the cancer some parasitic agent must become associated, which constitutes for Roncali and his "school" the true specific element in the appearance of the blastoma.

Clinica Pediatrica, Modena

12: 831-922 (Oct.) 1930. Partial Index

*Ether in Treatment of Traumatic Tetanus. G. Salvioli.—p. 848.

Ether in Treatment of Traumatic Tetanus.—Salvioli treated three patients with grave traumatic tetanus (in two of whom the evolution was known to be of seven and eight days, respectively, after the wound), by the rectal administration of a mixture of ether in oil as coadjuvant treatment with tetanus antitoxin. All the patients recovered. To verify the favorable action of the method on the evolution of the disease, animal experiments were made. In rabbits injected with fatal doses of tetanus toxin, the rectal administration of ether did not prevent death but prolonged the life of the animals longer than that of control animals. The repeated administrations of mixtures of a weak concentration of ether caused a condition of cachexia in the animals, probably the effect of the ether. The mechanism by which ether acts on the evolution of tetanic intoxication is unknown.

Folia Gynaecologica, Pavia

27: 321-425, 1930

*Action of Methenamine on Uterine Contraction. C. Vercesi.—p. 321.
*Microscopic Observations on Changes Induced in Uterus and Adnexa by Irradiation of Uterine Carcinomas and Fibromas. O. Macchiarulo.—p. 325.
Subserous Fibromyoma of Uterus, with Torsion of Pedicle. N. Dallera.—p. 359.
Roentgen Physiology of Uterus and Tube. N. Dallera and A. Rossi.—p. 373.

Action of Methenamine on Uterine Contraction.—Vercesi is convinced that methenamine used intravenously offers in the obstetric clinic an effective means for the stimulation of uterine contractions or for the provocation, in suitable cases, of labor, without injury to the mother or to the fetus.

Changes Induced in Uterus by Irradiation of Uterine Tumors.—Macchiarulo's histopathologic researches lead him to these conclusions: Irradiation in ordinary therapeutic doses affects the uterine mucosa, producing various degenerations of the cellular elements: pyknosis, karyorrhexis, vacuolation and changes in the aspect of the glands. Not even the muscular tunic of the uterus is immune to the action of the rays—atrophy, necrosis and fibrosis. The cell resistance of the uterine vessels is suppressed and these show various changes in the vascular tunics. From the researches of the author, there develops evidently an angioplasia in the irradiated tumors. The histochemical changes that are observed in fibromyomas extend to all neoplastic elements: muscular fibrocells, connective tissue fibers, vessels. The author ascribes the changes to factors of a chemical, physical and colloidal nature called into action by the irradiation. The author agrees with previous investigators in attributing to a reaction of the mesenchyma the leukocytic, lymphocytic, plasmacellular and histocytic infiltration observed in irradiated tumors. The loss of the cilia, the rupture of the cell nucleus and vacuolation of the elements of the tube are phenomena specifically assignable to the modifying action of the intra-uterine radiant energy: Emanations of radium coming from the uterine cavity produce atresia of the follicles in advanced maturation in the prolapsed ovaries and in a state subject to the influence of irradiation. It is possible, however, that the follicles, after a period of latency, reacquire their normal function.

Prensa Médica Argentina, Buenos Aires

17: 717-760 (Oct. 20) 1930

Concomitance of Lesions in Both Internal and External Meniscus of Same Knee Caused by Trauma: Twenty-Nine Cases. R. Finochietto and A. A. Covaro.—p. 717.
Acute Ataxia of a Polyneuritic Type from Carbon Sulphide Poisoning: Case. O. Luque.—p. 740.
Case of Tabetic Osteoarthropathy: Surgical Treatment. J. Diez and J. Michans.—p. 742.
Emotional Mutism Cured by Suggestion: Case. E. Mouchet.—p. 746.
*Vomiting of Tuberculous Patients Treated with Intravenous Injections of Hypertonic Solution of Sodium Chloride. R. F. Vaccarezza, C. A. Videla and G. Pollitzer.—p. 747.

Vomiting of Tuberculous Patients Treated with Intravenous Injections of Hypertonic Solution of Sodium Chloride.—Vaccarezza et al. used with success intravenous injections of 10 cc. of a 10 per cent solution of sodium chloride in the treatment of vomiting of tuberculous patients. During the first two or three days two injections are given daily, and then one injection should be given daily during a period that varies according to the results obtained but which, as a rule, may be prolonged for about one week. The injections should be given long after meal time to avoid a reaction of the organism manifested by the appearance of nausea. Hypertonic solution of sodium chloride used when freshly prepared has a rapid and marked action in arresting the vomiting of tuberculous patients. As a rule the vomiting disappears after the first injection, though sometimes three or four injections are necessary for its complete disappearance. Early discontinuance of the treatment may cause a reappearance of the vomiting, in

which case the treatment should be repeated. The authors gave the treatment to eleven patients with pulmonary tuberculosis with several types of vomiting (emetic cough, simple vomiting merely to expel food, or matinal vomiting, with either mucus or bile). In ten of the patients, the vomiting disappeared. In the remaining patient the results of the treatment were fair (diminution of the amount vomited and in the frequency of vomiting, but not complete disappearance of it). In some of the patients the disappearance of the vomiting was associated with the improvement of some other symptoms, such as the diminution of the fever, increased appetite and feeling of well being. The authors consider the number of patients treated hitherto as being too small to permit one to draw conclusions.

Semana Médica, Buenos Aires

37: 1329-1392 (Oct. 30) 1930

Care of Eyes. A. J. Manes.—p. 1329.
*Slight Painful Uronephrosis: Treatment by Denervation of Renal Pedicle and Nephropexy. J. Salleras.—p. 1334.
Internal Podalic Version in Muscular Dystocia with Retraction of Bandl's Ring: Mechanism of Labor According to Fernández's Technic. A. Maino.—p. 1341.
Plastic Surgery of Nose. R. Dellepiane Rawson and E. González Avila. —p. 1351.
*Efficacy of Commercial Preparations of Anterior Lobe of Hypophysis. A. Guitarte.—p. 1357.
*Nondiabetic Infantile Glycosuria. P. B. Landabure.—p. 1358.
*Excision of Presacral Nerve in Dysmenorrhea and in Pelvic Neuralgia. E. L. Vila and J. A. Viriot.—p. 1360.
Differential Diagnosis of Meningitis and Influenzal Meningism. G. Topolevsky.—p. 1370.
Protein Therapy in Whooping Cough and in Measles. G. Pontiggia. —p. 1373.

Uronephrosis Treated by Denervation of Renal Pedicle and Nephropexy.—Salleras says that the appearance of repeated attacks of renal colic suggests the occurrence of slight uronephrosis. Pyelography and pyeloscopy are of value for the early diagnosis of the condition when the distention of the pelvis and tubules of the kidney with urine is still moderate, thus permitting the performance of an operation by which a reasonably good functioning kidney may be secured. As a conservative operation to retain the kidney the author advises the performance of denervation of the renal pedicle, followed by nephropexy. He obtained good results with the operation in four patients whose ages ranged between 25 and 33 years. The reports and pyelographic observations of these cases are given. The action that denervation of the renal pedicle has on the renal pain is due to the suppression of the periarterial sympathetic fibers. The fixation of the kidney immediately after the performance of the denervation of the renal pedicle prevents the ptosis of the organ. In cases of abnormal implantation of the ureter in the pelvis, the fixation of the kidney as high as possible corrects the abnormality and provides a drainage of the kidney, which drainage is better than it was before the operation. When slight uronephrosis is caused by the presence of anomalous vessels of small caliber, the ligation of the vessels and liberation of the ureter should precede the denervation of the renal pedicle, which in turn precedes nephropexy.

Efficacy of Commercial Preparations of Anterior Lobe of Hypophysis.—Guitarte's article is a preliminary report on the results of his experiments to prove the efficacy of commercial preparations of the anterior lobe of the hypophysis. The author has found hormones of the anterior lobe in the preparations, by the administration of which to young rats he has obtained positive and sometimes intense reactions. Freshly prepared extracts from the anterior lobe of the hypophysis should be used because they are subject to a rapid deterioration. The author makes reference to the conflicting opinions in the literature with regard to the merit of pituitary preparations. He states that pituitary preparations, when freshly prepared, prove to have a marked therapeutic action when administered orally, intramuscularly or intravenously to human beings.

Nondiabetic Infantile Glycosuria.—Landabure reports the case of a patient, aged 5 years, who since the age of 5 months had had permanent glycosuria that was not modified by the diet or by insulin therapy. The patient had crises of vomiting with acetonuria at intervals of about three months, which disappeared spontaneously. He developed normally, however, with no symptoms that would indicate a diabetic origin of his glycosuria. The author says that, in cases of infantile diabetes, acidosis appears unexpectedly even if constant attention is given to the patients, while in his patient the presence of glycosuria was well tolerated, though the patient never received special care for diabetes because he was not a diabetic patient. His glycosuria was associated with a normal glycemia. There were no disturbances of the gluside metabolism (the test for the diagnosis of hyperglycemia was negative). There was also a diminution of the renal threshold. The clinical and the biologic diagnosis was that of nondiabetic glycosuria or renal diabetes. The author considers the child's condition rare because of the fact that, whereas he has observed more than 2,000 cases of diabetic glycosuria, he has found only 6 cases of nondiabetic glycosuria and while he has observed a total number of 30 glycosuria patients, all of whom were diabetic, the patient spoken of was the first who had a renal glycosuria of nondiabetic origin.

Excision of Presacral Nerve in Dysmenorrhea and in Pelvic Neuralgia.—Vila and Viriot say that with the proper selection of cases resection of the presacral nerve is indicated because of its gratifying results in all cases of intractable dysmenorrhea and pelvic neuralgia in which medical treatment fails. The authors resorted to this method in seventeen patients, aged from 17 to 39 years. Disturbances of the bladder or of the rectum were not observed. There were two or three spontaneous micturitions, as well as free elimination of gas since the first day after the operation. Menstruation appeared in all cases two or three days after the operation, regardless of the date of the previous menses. Resection of the presacral nerve (superior hypogastric) was the only operation performed in six cases of essential dysmenorrhea not associated with an organic or genital lesion. There were five recoveries and one failure. The resection of the presacral nerve was associated with an adnexopexy in six cases of sclerotic ovaritis and with some other operations on the genitalia in five cases in which lesions of the genitalia complicated dysmenorrhea. Of the entire group ten patients (58.82 per cent) were cured with complete disappearance of both dysmenorrhea and pelvic pain, three patients (17.65 per cent) showed a marked improvement, while in four patients (23.53 per cent) the treatment failed.

Beiträge zur Klinik der Tuberkulose, Berlin

75: 525-806 (Oct. 23) 1930

*Tuberculosis: Prophylaxis with B C G Vaccine. A. Nohlen.—p. 525.
Roentgen Determination of Position of Caverns in Lung. A. Genersich. —p. 535.
Types of Chronic Pulmonary Tuberculosis in Rhineland. N. Westenrijk. —p. 537.
*Course of Tuberculosis Through Generations. K. F. Andvord.—p. 552.
Tuberculosis Morbidity Among Industrial Workers. L. Vajda.—p. 564.
Pathologic Anatomy of Tuberculosis in Children. H. Kudlich.—p. 575.
Pleural Tuberculosis with Large Nodules: Case. J. Gwerder and L. Kalmar.—p. 592.
*Spleen Extract in Treatment of Pulmonary Tuberculosis. F. Mattausch. —p. 597.
Treatment of Pulmonary Tuberculosis with Nonspecific Lipoids. E. Paulsen.—p. 605.
*Metal Salt Treatment of Tuberculosis. O. Gessner and K. Siebert. —p. 609.
Dietary Treatment of Tuberculosis. P. Rehfeldt.—p. 613.
Value of Complement Fixation Reaction and Serum Lability Reaction in Tuberculosis. G. Ivanovics.—p. 657.
Dynamics of Nitrogen Metabolism in Tuberculosis. S. Leites and D. Ebitsch.—p. 662.
Artificial Pneumothorax in Tuberculosis. O. Arni.—p. 676.
Exudative Pleuritis: Clinical Aspect. O. Gsell.—p. 701.
Pneumothorax Exudate Caused by Mixed Infection: Surgical Treatment. H. Storz.—p. 734.
Pleural and Peritoneal Exudates: Sugar Content. J. Herms.—p. 748.
*Resection of Scalene Muscles as Supplementary Operation in Avulsion of Phrenic Nerve. Kochs, Els and Junkersdorf.—p. 772.

Tuberculosis: Prophylaxis with B C G Vaccine.—Nohlen describes experiments in which he noted that in monkeys treatment with B C G vaccine did not prevent a subsequent natural infection with virulent tubercle bacilli. The percentage of infections, however, was much higher in animals kept indoors than it was in animals kept in the open air.

Course of Tuberculosis Through Generations.—Andvord states that the tuberculosis mortality shows a characteristic, highly regular wave movement that during several decades has been on the descent over practically the entire civilized world. In England the decrease in the tuberculosis mortality began in the middle of the nineteenth century whereas in Nor-

way it did not begin until 1885. The decrease progressed from generation to generation since the members of each new generation period seem to have a greater resistance with regard to the tuberculosis toxin than did the members of the preceding period. Each generation has its own definite curve since the degree of infection during the first years of childhood acts as an index for the mortality percentage for the subsequent age periods; a decrease in the tuberculosis mortality during the first years of childhood is followed by a similar decrease from twenty to twenty-five years later in adults.

Spleen Extract in Treatment of Pulmonary Tuberculosis.—Mattausch has used spleen extract with success over a period of one and one-half years in the treatment of 140 persons with pulmonary tuberculosis. Roentgenograms of several patients taken before and after the treatment show definite indurative transformation processes. The stabilization of the defense powers of the patients following the ingestion of spleen extract is shown by the disappearance of the deviation to the left and the appearance of lymphocytes and eosinophils in the leukocyte picture.

Metal Salt Treatment of Tuberculosis.—Gessner and Siebert report their observations in several large series of experiments on the modification of experimental tuberculosis in guinea-pigs by the parenteral administration of metal salts (manganese chloride and beryllium chloride combined and manganese chloride alone). Although the treatment with metal salts at first showed a transient favorable action on the tuberculosis, larger doses accelerated the course of the disease. It is stated that the results of the experiments are considered not as a refutation of the value of metal salt therapy in experimental tuberculosis in animals but as evidence that in this form of therapy the most important factor is the correct dosage.

Resection of Scalene Muscles as Supplementary Operation in Avulsion of Phrenic Nerve.—Kochs et al. first describe experiments that they performed on monkeys to study the effects of resection of the scalene muscles. After having demonstrated that the operation was completely harmless they performed it as a supplementary operation to avulsion of the phrenic nerve in twelve persons with unilateral pulmonary tuberculosis. In some of the patients the transverse phrenicotomy incision was used but it was found to be unsatisfactory because it did not give good exposure of the median and posterior scalene muscles. Therefore Sauerbruch's oblique phrenicotomy incision extending from the middle of the posterior edge of the sternocleidomastoid muscle down to the clavicle was adopted. After the phrenic nerve has been exposed and avulsed the anterior scalene muscle is dissected free in order to separate it posteriorly from the nerve plexus and medially from the large blood vessels. The muscle is then divided a short distance above its lower attachment. The retracted stump of the muscle is grasped with forceps and drawn forward; a piece 2 cm. long is then resected. Simple division of the muscle gives unsatisfactory results because it is followed by an early connective tissue union of the two ends. The lateral edge of the brachial plexus is then exposed and is carefully drawn anteriorly and medially with a blunt retractor. This exposes the wider median scalene muscle, which is also divided; in this step of the operation care must be taken not to divide even the finest nerve fibers that pass over or through the muscle. Particularly in the division of the posterior part is great care necessary in order not to include a part of the plexus in the scissors. Usually the short stump retracts so far posteriorly that there is only a slight possibility of performing resection. The posterior scalene is usually adherent to the median scalene and frequently cannot be separated from it except in cases in which a previous avulsion of the phrenic nerve or pneumothorax treatment has been followed by secondary hypertrophy of the muscle. After all three muscles have been divided or resected there is present a cavity somewhat larger than a pigeon's egg, which is traversed by the plexus. With a careful technic the hemorrhage is minimal and primary closure of the wound can always be performed. Only about fifteen minutes is required for the entire operation and the after-treatment presents no difficulties or complications. Just as in all operations that result in a compression of the tuberculous lung, there occurs a moderate increase in temperature, which, however, lasts only two or three days. The amount of sputum, which is sometimes increased slightly during the first two days following the operation, diminishes rapidly and markedly. In all twelve patients in whom this combined treatment was used the permanent results were excellent and unquestionably better than those obtained with simple avulsions of the phrenic nerve. Moreover, in none of the cases did the authors note defects or disturbances attributable to resection of the scalene muscles. They recommend a trial of this harmless and in some cases markedly beneficial combination of avulsion of the phrenic nerve and resection of the scalene muscles.

Deutsche medizinische Wochenschrift, Berlin

56: 1987-2030 (Nov. 21) 1930. Partial Index

*Treatment of Puerperal Peritonitis. H. Runge.—p. 1989.
*Fatal Poisoning Caused by Mushrooms (Helvella Esculenta). H. Stahr.—p. 1993.
*Diagnosis of Pulmonary Tuberculosis by Demonstration of Bacilli. H. Opitz.—p. 1995.
Agranulocytosis. W. Nipperdey.—p. 1997.
Relation Between Diabetes and Trauma. W. H. Veil.—p. 1999.

Treatment of Puerperal Peritonitis.—Runge points out that, while formerly many leading authorities advised against surgical treatment in puerperal peritonitis, recently many have recommended it. In consideration of the fact that without operative treatment the mortality rate is almost 100 per cent and that early operation saves many lives, this attitude seems justified. The author discusses the various causes of puerperal peritonitis, and he directs special attention to that form which results when substances with toxic action are introduced into the uterus in order to effect an abortion. He gives the clinical histories of three patients in whom puerperal peritonitis was caused by the injection of soap suds into the uterus. One of these patients, who was operated on twelve hours after the injection, recovered, whereas the other two, who came under clinical observation only on the third and the fifth day, respectively, died. From this the author concludes that symptoms of peritonitis after soap suds injections necessitate immediate operative intervention. However, in deciding on the necessity for surgical treatment in puerperal peritonitis one does not have to consider the etiology. The fact that a puerperal peritonitis exists indicates that surgical treatment is necessary. A tabular report shows the great significance of an early operation. Of twelve patients who received surgical treatment during the first twenty-four hours after the manifestation of the symptoms of peritonitis, nine recovered. Of five patients who were operated on during the second twenty-four hours, only one recovered, and those who received operative treatment later than that all died. In evaluating the various surgical methods the author comes to the conclusion that the supravaginal removal of the uterus and of the ovaries, but with conservation of a stump of the portio vaginalis, is the best method. During the after-treatment the circulation and the peristalsis should receive special consideration. Advisable is an intravenous, continuous drop infusion of a 5 per cent solution of an invert sugar. In all patients who received surgical treatment and who recovered, abscesses developed, which in some instances had a phlegmonous character but which did not greatly retard the healing process. In the conclusion the author stresses that septic abortions should always receive clinical observation, because only thus is the early recognition of peritonitis guaranteed, and the opportune time for an operation is not neglected.

Fatal Poisoning Caused by Mushrooms.—Stahr reports two cases of poisoning with fatal outcome, resulting from ingestion of mushrooms of the variety of *Gyromitra esculenta* or of *Helvella esculenta*. In both instances the necropsy showed that death was caused by helvella acid poisoning. The author does not accept the hypothesis that the toxicity of *Gyromitra esculenta*, the so-called turban-top, varies; that in certain localities and at certain times, they are more poisonous than usual. He thinks that they are always poisonous until they are cooked at least five minutes and the cooking water is poured away. The cooking does not destroy the toxic substances, but they pass into the water, and this, therefore, should always be completely removed. The fatal outcome of the cases reported may be due to several factors. It is probable that the mushrooms had not been boiled for a sufficient length of time or that the water had not been completely removed. However, the large

quantities of the mushrooms ingested, and constitutional anomalies of the patients, in one case a diseased liver, and in the other case a gastric ulcer, may have aggravated the condition.

New Investigations on Diagnosis of Tuberculosis by Demonstration of Bacilli.—Opitz states that although epituberculous and perifocal infiltrations in children are generally thought to be closed forms of pulmonary tuberculosis, tests revealed that the majority of such children excrete bacilli. Among thirty of these patients, between 4 months and 4½ years of age, there were only two in whom the tests gave negative results. To the question as to when an originally open tuberculosis can be considered cured or, at least, closed, the author replies that this can be determined only by the animal experiment, because the examination of the sputum occasionally gives negative results when the animal experiment reveals the presence of bacilli. In discussing the care of such patients who have a closed tuberculosis but who, nevertheless, disseminate bacilli, the author states that they should be cared for in special stations, because they represent a danger for healthy children, but at the same time it would not be right to put them in the same wards with patients who have an open tuberculosis.

Klinische Wochenschrift, Berlin

9: 2137-2184 (Nov. 15) 1930

Histamine: Chemical Composition and Clinical Use. A. Küpper. —p. 2137.
Relation Between Acute Rheumatic Polyarthritis and Focal Infection. G. von Conta.—p. 2140.
*Copper Therapy of Anemia in Infants. E. Schiff, H. Eliasberg and N. Joffe.—p. 2144.
*Treatment of Pernicious Anemia with Preparation from Gastric Mucous Membrane. N. Henning and G. Stieger.—p. 2145.
Presence of Choline and of Choline Ester in Blood. H. Bohn.—p. 2147.
*Gout in Infant, Aged Five Weeks. E. Mayer von Schopf.—p. 2148.
New Method for Biologic Demonstration of Irradiated Ergosterol. J. Warkany.—p. 2152.
Relation Between Anterior Lobe of Hypophysis and Cancer. J. Hofbauer. —p. 2153.
Specific Cutireaction in Patients with Gonorrhea by Means of Specific Protein-Free Substances. W. Casper.—p. 2154.

Copper Therapy of Anemia in Infants.—Schiff et al. reasoned that because Steenbock had obtained favorable results with copper therapy in rats that had been made anemic by feeding them only with cow's milk, copper might likewise be helpful in anemia in infants. Accordingly they instituted copper therapy in four anemic infants. In two of them the anemia accompanied erythrodermia; in one it concurred with pylorospasm and in the fourth with severe visceral syphilis. The nurslings were given twice daily 20 drops of a 1 per cent solution of hydrous copper sulphate, which is equal to about 5 mg. of copper per day. Under the influence of this therapy the blood picture improved steadily in all four cases. The authors conclude that, although the number of cases in which copper therapy proved helpful is still limited, copper has a distinct therapeutic value. They recommend this treatment for further investigation, and they themselves are making observations on anemic premature infants and are conducting experiments.

Treatment of Pernicious Anemia with Preparation from Gastric Mucous Membrane.—Henning and Stieger reasoned that if in the normal gastric juice there is a substance which stimulates the formation of blood, it must be produced in the gastric mucous membrane. Accordingly they treated patients who had pernicious anemia with a preparation from the gastric mucous membrane of hog stomachs. The preparation was employed in five cases. The patients received daily from 40 to 80 Gm., a quantity equal to the mucosa of one or two stomachs. When given with broth or with applesauce the patients found this form of treatment entirely agreeable. The effect on the blood picture was favorable; the hemoglobin content and the number of erythrocytes increased steadily. Hydrochloric acid-alcohol extracts of the mucosa were ineffective. The antianemic substance was found in the fundus portion as well as in the antrum portion of the mucous membrane. Peptic ferment was detected only in minor quantities in the preparation from the mucosa of the corpus ventriculi, and it was entirely missing in the preparation from the mucosa of the antrum. From this it may be concluded that the effect of the stomach preparation is independent of the peptic protein digestion.

Gout in Infant, Aged Five Weeks.—Mayer von Schopf reports the clinical history of an infant with gout. Subcutaneous tophi were observed by the mother in the third week of life. The infant, who was breast-fed, had vomited since birth after nearly every meal. Because of the constant vomiting a physician was consulted, who thought of pylorospasm and sent the infant to the clinic. There were no signs of pylorospasm. The diagnosis was not clear at first. Considered were multiple abscesses, congenital neoplasm with metastases or tendovaginitis fibrinosa. Treatment was of little avail and the child's condition grew steadily worse. The puncture of a pea-sized tumor on the right ankle joint yielded a snow-white, pasty substance. Following the microscopic examination of this substance, gout was thought of. The tophus growths progressed rapidly and the child died. The author points out that the significance of this case for the gout problem lies in the fact that only endogenous purines formed the uric acid. The predominance of the constitutional-pathologic factor is marked. Exogenic influences such as foods, environment and mode of life had no influence on the development of gout in this case. The question as to what causes the retention of uric acid has not become clear. Microscopic examination of the bones revealed neither primary nor secondary inflammatory changes. The kidneys had the characteristics of the gouty contracted kidney. Crystal deposits were present in unusually large amounts and they were predominantly in the interstitial tissues. Tissue necroses were not observed.

Medizinische Klinik, Berlin

26: 1695-1734 (Nov. 14) 1930. Partial Index

Analgesics and Their Combinations. E. Hesse.—p. 1695.
Present Status of Protective Ferments. E. Abderhalden.—p. 1696.
*New Aspects of Crusade Against Malaria in Italy. C. Schilling. —p. 1697.
Anesthesia with Intravenous Administration of Tribrom-Ethanol. K. Hübscher.—p. 1701.
Anguillula Intestinalis. Brückner.—p. 1703.
Urethral Prolapse in Child. W. Pollak and H. Klement.—p. 1704.
Diagnostic Prophylaxis of Renal Calculi. H. Pfitzner.—p. 1704.
Gonorrhea: Diagnosis, Prevention and Treatment. H. Caspary.—p. 1707.
Pharmacotherapy of Insomnia. K. Freistadt.—p. 1709.
Tests for Detection of Bilirubin in Urine. F. Reiche.—p. 1710.

Crusade Against Malaria in Italy.—In the first part of the article, Schilling discusses the development of malaria parasites. In discussing the various methods of combating malaria that are employed in Italy, he first mentions quinine therapy. The state distributes quinine among the patients at a low cost. However, the author thinks that supervision is necessary because without supervision many patients discontinue the use of quinine as soon as the fever disappears, and such a therapy is of course incomplete. The mechanical protection, namely, the screening of the houses, is enforced by the Italian railroads. The drainage of marshy districts has also been a great help in combating malaria, and, in order to destroy the mosquito larvae in the canals, gambusias have been introduced into the canals. In shallow waters such as the "Lago di Trajano" the breeding of mosquitoes is prevented by counteracting the vegetation and by scattering paris green around the edges. The result of all these measures has been that in the malaria areas the mortality rate from malaria has considerably decreased.

Wiener klinische Wochenschrift, Vienna

43: 1429-1460 (Nov. 20) 1930

Treatment of Fractures. A. Wittek.—p. 1429.
*Rôle of Liver in Regulation of Tonus of Sympathetic Nervous System: Mechanism of Pathogenesis of Icteric Bradycardia. D. Danielopolu, G. G. Proca and R. Brauner.—p. 1432.
*Clinical Determination of Intracranial Trauma in the New-Born. E. Preissecker.—p. 1434.
*Treatment of Trigeminal Neuralgia. A. Lux.—p. 1435.
Modern Methods of Anesthesia. E. Horner.—p. 1437.
Idem. G. Lotheissen.—p. 1438.
Brucella Abortus Infections. K. Herman.—p. 1438.
Interruption of Pregnancy on Account of Pulmonary Tuberculosis. A. V. Frisch.—p. 1441.

Rôle of Liver in Regulation of Tonus of Sympathetic Nervous System.—Danielopolu et al. state that in a former article they had shown that the liver has the power to retain choline injected into the portal vein or into one of its branches. In this report they describe their further experiments on dogs. First they determined the smallest doses of choline and epinephrine that will produce a circulatory effect when the injection

is given into a peripheral vein, and then the smallest doses that will produce a circulatory effect when the injection is given into the portal vein or into an intestinal vein. Further they studied the action of epinephrine and choline when they were injected into the hepatic artery, into the renal artery or into a peripheral artery. These comparative experiments were made in order to determine whether the action was due to a certain tissue or whether it was a specific action. Finally they injected choline and epinephrine into a peripheral vein, into an intestinal vein and into the portal vein of dogs, which, on the two preceding days, had been given injections with tolylenediamine. The epinephrine and choline injections were given forty-eight hours after the first tolylenediamine injection. At this time the dogs already showed icterus and the liver cells showed considerable changes. The authors' observations are summed up as follows: 1. Epinephrine and choline injected into the portal or hepatic veins has a circulatory effect only when the doses are much larger than those which are effective in a peripheral vein. 2. The liver exerts a regulatory influence in that it maintains a fixed humoral medium of substances which influence the sympathetic system. 3. The liver, which has become insufficient as the result of injections of tolylenediamine, loses the capacity for retention of choline and epinephrine. 4. The changes in the sympathetic tonus, which are also noted in the sinusal bradycardia during icterus, are caused by the insufficiency of the liver that accompanies icterus; or, more precisely stated, they are due to a deficiency in the regulatory action of the liver on the tonus of the sympathetic nervous system.

Clinical Determination of Intracranial Trauma in the New-Born.—On the basis of the fact that every extravasation in the body causes changes in the serum, Preissecker attempted to detect intracranial traumas by examining the pigment content of the serum. He points out that in the colorimetric investigations consideration should be given to the physiologic hyperbilirubinemia that exists in the new-born and that causes a heightened yellow discoloration. In infants with intracranial hemorrhages, however, the serum contains, besides this yellow bilirubin pigment, a yellowish-brown pigment from a hemoglobin derivative. The author determined the pigmentation of the serum in a number of new-born infants in whom intracranial hemorrhage was suspected and also in normal new-born infants. In summing up the results of his tests he says that in a new-born infant with suspected cranial trauma an intracranial hemorrhage may be assumed when the serum shows a decided yellowish-brown discoloration, provided, of course, there are no other extravasates such as a cephalematoma. The yellowish-brown pigment from the hemoglobin derivative appears in the serum on the second day; it is most pronounced on the third day, and after that it gradually disappears. In icterus neonatorum there also exists an increase in the bilirubin pigment. However, in this condition the serum has a pure yellow color, and thus it can be differentiated from the yellowish brown pigmentation in case of intracranial hemorrhage.

Treatment of Trigeminal Neuralgia.—Lux first criticizes the generally accepted theory of the etiology of trigeminal neuralgia and the methods of treatment, which had been based on this theory. In observing patients during attacks of trigeminal neuralgia, he noted a hyperemia of the skin in the region of the trigeminus and an increased perspiration and tear secretion. The patients tried to counteract their pain by pressing and massaging the painful region. It was also observed that in the intervals between the attacks there was neither hyperalgesia of the skin nor pressure pains. From this the author concluded that the phenomenon is due to vascular spasms in the region of the ganglion. He hoped to overcome these spastic conditions by diathermy treatment. Experiments on cadavers convinced him that, by applying electrodes to both eyes and to the back of the neck, the entire ganglion and its surroundings could be influenced. When the method was employed on patients it was found that their eyes were extremely sensitive to pressure. But this difficulty was overcome by padding them with cotton that had been saturated with physiologic solution of sodium chloride and by using electrodes of wire netting. The treatment was first employed on two patients during an attack, and the results were favorable. During the following five years the author employed this therapy on about 100 patients. He gives several case reports. The number of treatments necessary differs in each case. In some instances from five to ten treatments were sufficient; in others, as many as between twenty and forty were needed. The author recommends the further investigation of this treatment.

Zeitschrift für Urologie, Leipzig

24: 801-880, 1930

*Tuberculous Nephritis: Clinical Aspect. S. Simon, S. Werboff and W. Gronsfeld.—p. 801.
*Nephrolithiasis with Three Thousand Stones. E. Sacharoff.—p. 827.
External Orifice of Urethra: Anomalies in Gonorrhea. E. Ssemenjako. —p. 829.
Gonorrhea: Combined Vaccine Treatment and Chemotherapy. N. J. Baschkirzew.—p. 843.
Preputial Sac: Endoscopic Examination. L. S. Sirota.—p. 851.

Tuberculous Nephritis: Clinical Aspect.—On the basis of six cases that they observed in children with tuberculous arthritis, Simon et al. discuss the clinical aspect of tuberculous nephritis. The general condition of the patients remained unchanged; in those in whom the arthritis was healing, the state of nutrition and the weight and temperature curves were the same as in joint tuberculosis without involvement of the kidneys. In one of the six children there occurred occasionally attacks of pain in the kidney region, which lasted several days. These attacks of pain, which necessitated the administration of a narcotic, appeared one and a half years after the first symptoms and were not accompanied by other symptoms; with the exception of an occasional increase in the number of leukocytes, the urine remained unchanged during the attacks of pain. In most of the children the blood pressure was slightly or definitely above normal. In none of the children was the heart enlarged. The speed of erythrocyte sedimentation was the same as that noted in tuberculous arthritis. In all the children the bladder capacity was normal. Cystoscopic examination did not reveal changes in the mucous membrane that could have been considered typical for tuberculosis. The region of the ureters was normal in all the patients but in three of them there was a redness of the neck of the bladder or of the trigon.

Nephrolithiasis with Three Thousand Stones.—Sacharoff reports a case of nephrolithiasis in a man, aged 33, who had never had attacks of severe pain or disturbances of urination but in whom roentgen examination disclosed a large number of stones in the left kidney. Because of a feeling of heaviness and pain in the region of the kidney, it was removed. When the specimen was sectioned it was found that the kidney pelvis was greatly dilated and that the kidney consisted of several cavities that contained a large number of stones of various sizes. The thin walled cystlike projections proved to be the hydronephrotically dilated calix. The renal parenchyma was preserved in only the upper pole; in the middle part of the kidney and in the lower pole the parenchyma had disappeared completely. In the mucosa of the pelvis and of the dilated calix there were no signs of inflammation. The total number of stones removed was 3,000 and their weight was 21.5 Gm. All the stones consisted of calcium phosphate. The absence of colic in the anamnesis was explained by the fact that a large pelvic stone had blocked the ureteral orifice almost completely and had prevented the passage of small stones through the ureter.

Zentralblatt für Gynäkologie, Leipzig

54: 2753-2816 (Nov. 1) 1930

Internal Secretion of Placenta. E. Philipp.—p. 2754.
Physiology and Pathology of Sex Hormone, Especially of Hormone of Corpus Luteum. C. Clauberg.—p. 2757.
Resistance of Human Ova to External Injuries: Growth of Ovum Without Fertilization Following Attempted Abortion. J. Granzow. —p. 2770.
*Complications Caused by Salpingography. R. S. Hoffmann.—p. 2776.
Criticism of So-Called Absolutely Reliable Hemostasis Method of Logothetopoulos. N. Louros.—p. 2781.
Treatment of Trichomonas Colpitis with Salicylic Acid in Crayon Form. M. Rodecurt.—p. 2784.

Complications Caused by Salpingography.—Hoffmann gives the history of salpingography and then reviews the literature. He points out that several authors report complications caused by the contrast medium. Then he gives a detailed description of a case in which painfulness remained after salpingography had been done. It was found that the contrast

medium had been retained by the left tube. After mentioning other complications that have been observed after salpingography, the author comes to the conclusion that, especially in cases of sterility, salpingography should not be done. It may cause new infections, a flaring up of old processes or an occlusion of the tubes, or the contrast medium may be retained. It is stressed that insufflation of the uterine tubes does not involve such dangers as salpingography, and that in cases of sterility it gives the same or even better results than salpingography.

Nederlandsch Maandschrift voor Geneeskunde, Leyden

17: 189-240, 1930

*Bronchostenosis in Children Resulting from Swollen Hilus Lymph Nodes. E. Huizinga.—p. 189.
Pathology of Uniovular Twin. C. de Lange.—p. 199.
Use of Calmette-Guérin Vaccine. J. C. Schippers.—p. 209.
Immunization Against Diphtheria and Scarlet Fever in Wassenaar Schools. H. D. Boer.—p. 216.
Poliomyelitis Larvata. F. J. Peljak.—p. 225.
*Encephalitis Following Serious Burns in Child, Aged Two Years. L. Coenen.—p. 235.

Bronchostenosis in Children Resulting from Swollen Hilus Lymph Nodes.—Huizinga describes in children six cases of bronchostenosis resulting from a swelling of the hilus lymph nodes. In all six patients the manifestations began in an acute manner and the patients were sent to the clinic under the suspicion of the presence of a foreign body. The correct diagnosis can often be reached only by bronchoscopy. In two cases an acute lymphadenitis was involved, and in three or four cases tuberculosis was certain. In case of rupture, good therapeutic results can often be secured through bronchoscopy, either by the removal of granulations (two cases) or by the elimination of a caseous mass in the more acute stage (two cases). The most common place for the rupture is the point where the trachea merges with the right bronchus.

Encephalitis Following Serious Burns in Child, Aged Two Years.—Coenen reports the case of a child, aged less than 3 years, who was seriously burned over his whole body by tipping boiling water over himself. The following day a temperature of 40.5 C. (104.9 F.) developed; also convulsions. The child (a twin and born prematurely at seven months) lapsed into a comatose state; the eyes became fixed toward the left and Kernig symptoms and stiff neck developed. The burns healed slowly but manifestations pointing to changed conditions in the cortex cerebri and the meninges appeared. The child had had a bad fall three months previously. Encephalitis following burns has rarely been reported in the literature. The earlier cases are cited. How is the encephalitis to be explained? It might be assumed that there was a latent encephalitis and that it was brought out by the burns; but such an assumption would be justified only if several other cases of encephalitis had been reported at that time, but such was not the case; hence, it must doubtless be assumed that the encephalitis developed as a result of the burns. Toxic substances may have formed that induced the encephalitis. The child has not yet recovered sufficiently to recognize his father.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

74: 5463-5562 (Nov. 8) 1930

Osteomyelitis of Cranial Bones, Associated with Infectious Processes of Nose and Accessory Sinuses. C. E. Benjamins.—p. 5466.
Caterpillar Hair Infection of Eye (Ophthalmia Nodosa seu Pseudotuberculosa), Caused by the Caterpillar of Euproctis Chrysorrhoea. H. Weve.—p. 5476.
A Record Syringe for Diagnostic Puncture and Aspiration. J. de mol van Otterloo.—p. 5493.
*Ova of Trichosomoides as Nuclei of Experimental Stones of Bladder. E. C. van Leersum.—p. 5495.
Treatment of Septic Manifestations with Acriflavine. M. van der Reis.—p. 5498.

Ova of Trichosomoides as Nuclei of Experimental Stones of Bladder.—Van Leersum reports that, in connection with a biologic vitamin A determination in a sample of cod liver oil with phosphorus, some peculiar gritty crystals were found in the bladder of one of the rats. The substance was a calcium salt—in all probability calcium phosphate, of which the concrementa commonly consist that one finds so often in the bladder and in the kidneys of rats that are deficient in vitamin A. Some of these crystalline bodies had a nucleus of a brownish color. The colorless crystals, as was to be expected of calcium phosphate, dissolved in acetic acid, but the brown nucleus was resistant. On closer examination, certain peculiarities were discovered that led to the assumption that formed elements were involved, probably the ova of a parasite. A more extensive inquiry was instituted, and in seven of the nineteen rats that had served for the test threadlike micro-organisms were found in the bladder. Microscopic inspection revealed a large number of eggs that in color and form resembled the objects in the crystalline concrementa. Professor Ihle, to whom the preparations were referred, concluded that the organisms belonged to the genus *Trichosomoides* and were likely specimens of *Trichosomoides crassicauda* Railliet. The presence of the eggs in the concrementa was doubtless a chance occurrence.

Hospitalstidende, Copenhagen

73: 999-1026 (Oct. 9) 1930

*Malaria Treatment of Dementia Paralytica. I. Ostenfeld.—p. 971.
*Amount of Fibrin in Blood After Intramuscular Injection of Sulphur. S. A. Holbøll and G. Herborg.—p. 1018.

Malaria Treatment of Dementia Paralytica.—Of Ostenfeld's 100 patients treated only by malaria, with an observation time of up to seven years, about one half were influenced to a greater or less degree, 10 per cent with considerable benefit.

Amount of Fibrin in Blood After Intramuscular Injection of Sulphur.—Holbøll and Herborg found that an intramuscular injection of sulphur was always followed by an increase in the fibrin in the plasma up to pathologic values; as a rule the quantity was doubled. In the individual, the relation between the increase in the amount of fibrin and the rise in sedimentation was absolutely proportional.

73: 1027-1038 (Oct. 16) 1930

*Relation of Leukocytes After Intramuscular Injection of Sulphur. S. A. Holbøll and G. Herborg.—p. 1027.
*Case of Pancreatogenic Steatorrhea. J. E. Holst.—p. 1032.

Relation of Leukocytes After Intramuscular Injection of Sulphur.—Holbøll and Herborg state that after an intramuscular injection of sulphur there was a considerable increase in the number of leukocytes in the blood, the value frequently rising to more than 20,000; in one case, to 31,000. The rise was in the main parallel to the fever reaction and due exclusively to an increase in the number of polymorphonuclear leukocytes.

Case of Pancreatogenic Steatorrhea.—In Holst's patient typical symptoms of diabetes had set in more than ten years previously with the addition several years later of steatorrhea. He says that steatorrheas of various kinds may cause a picture strongly resembling pluriglandular insufficiency. Thrombopenia and polyneuritis, noted in his case and previously described in pancreatogenic steatorrhea, may also occur in steatorrheas of other kinds.

73: 1039-1050 (Oct. 23) 1930

Vacuum-Steam Autoclave. L. E. Walbum.—p. 1039.
*Pasteurella Infection in Woman After Cat Bite. O. Kapel and J. Holm.—p. 1044.

Pasteurella Infection in Woman After Cat Bite.—Kapel and Holm report a case of pasteurellosis in which there was local subacute infection with tendency to the formation of degenerating glandular tissue. The source of infection was in all probability through the cat bite.

73: 1051-1078 (Oct. 30) 1930

*Effect of Epinephrine on Gastric Secretion. K. Roholm.—p. 1051.
*Differential Diagnostic Significance of Uric Acid Values in Plasma in Patients with Exudative Pleuritis. J. A. Frederiksen.—p. 1059.
*Remarks on Patella Partita. A. Rischel.—p. 1068.

Effect of Epinephrine on Gastric Secretion.—In ten patients with normal gastric secretion and motility Roholm failed to establish any change in the fasting secretion after the subcutaneous injection of 1 mg. of epinephrine.

Significance of Uric Acid Values in Plasma of Patients with Exudative Pleuritis. — Frederiksen concludes that increased uric acid values in the plasma in patients with exudative pleuritis strongly support the diagnosis of tuberculous exudative pleuritis.

Remarks on Patella Partita.—Six cases of this anomaly with patella divided in two or more parts are reported by Rischel, and the etiology, symptoms, diagnosis and treatment are discussed.